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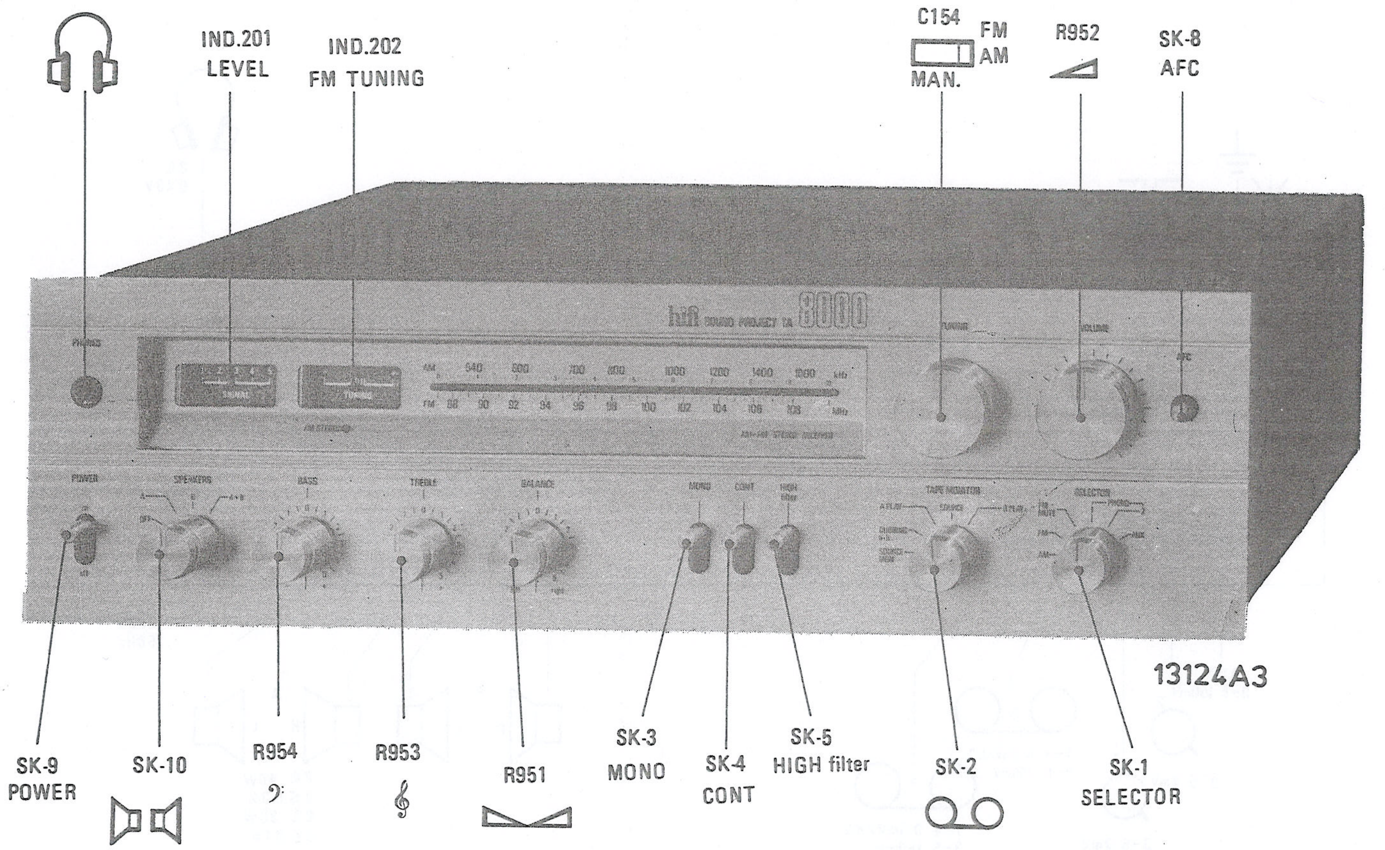
Service
Service
Service

Service Manual



IND.201
LEVEL
IND.202
FM TUNING
C154
FM
AM
MAN.
R952
SK-8
AFC
13124A3
SK-9
POWER
SK-10
R954
R953
R951
SK-3
MONO
SK-4
CONT
SK-5
HIGH filter
SK-2
SK-1
SELECTOR

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviçio

Subject to modification
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Printed in The Netherlands
PHILIPS

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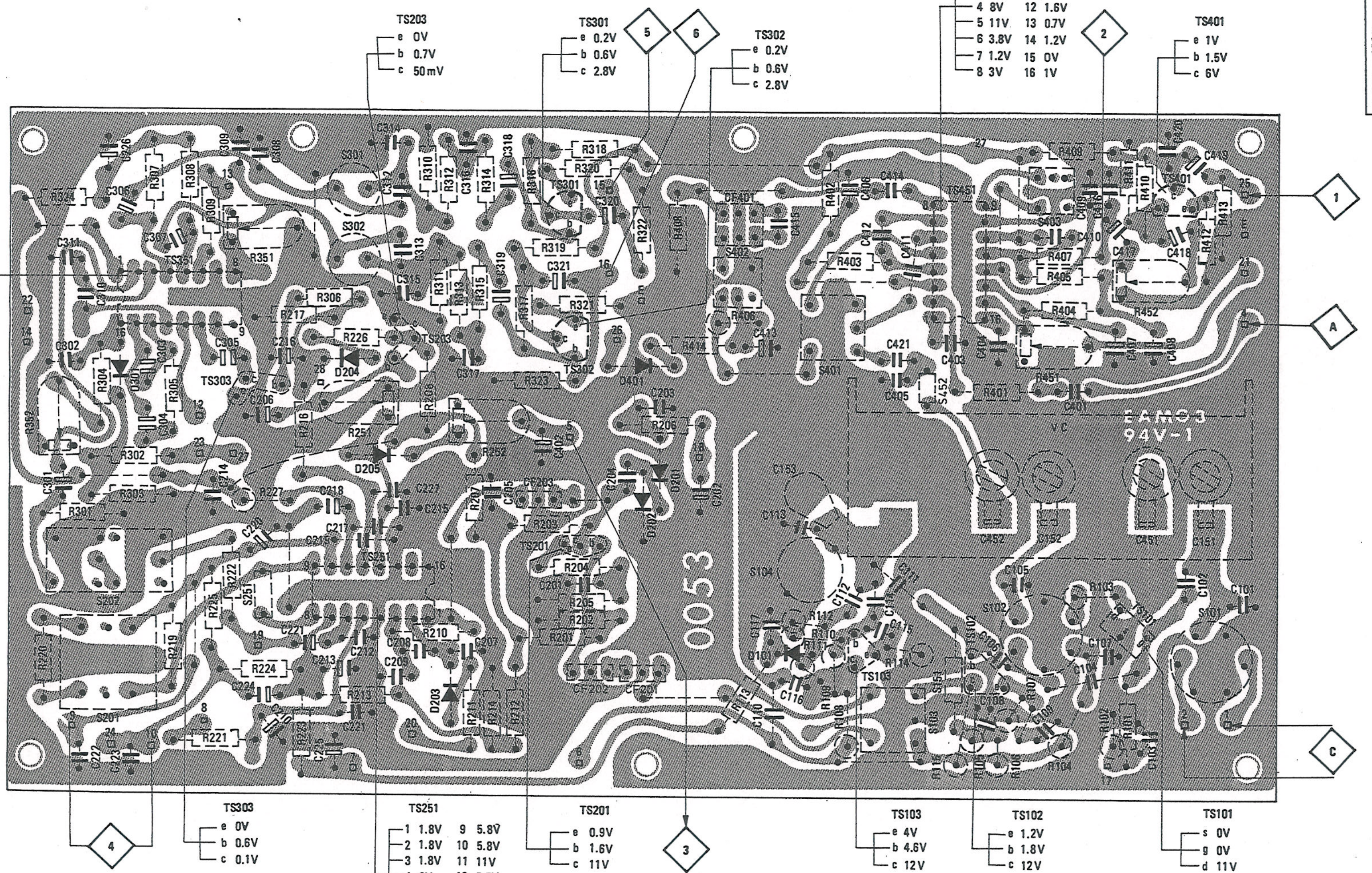
M	D301 TS351 TS303 D302 S302 S301 TS203 CF203 TS301 TS302 S402 CF401 D101 S401 S452 TS451 S403 VC TS401	M
M	S201 S202 S251 TS251 D204 D205 D203 TS201 CF202 CF201 D401 D202 D201 S104 TS103 S103 S151 TS102 S102 TS101 S101	M
C	226 306 307 214 309 308 314 312 313 316 318 320 415 412 414 411 410 409 416 417 418 420 419	C
C	301 302 310 304 303 204 305 206 216 218 315 227 215 317 205 319 402 321 C204 203 202 153 413 113 421 405 406 403 404 401 407 408	C
C	311 222 223 224 220 210 221 225 213 219 217 221 212 209 208 207 201 117 110 116 112 114 115 111 108 106 105 109 104 107 103 102 101	C
R	324 307 308 309 351 306 310 312 314 316 319 320 318 322 408 402 403 405 407 409 411 410 412 413	R
R	352 301 304 303 302 305 227 217 216 226 251 208 311 313 252 315 207 317 323 321 206 414 406 401 451 404 452	R
R	220 219 225 221 222 224 223 213 210 211 214 212 201—205 108—113 114 115 105—107 101—104	R

C	452c 451c	C
R	451c 452c	R


0053
EAM03
94V-1
VC
1
2
3
4
5
6
A
C

TS351
- 1 12V
- 2 2.6V
- 3 5.4V
- 4 7V
- 5 7V
- 6 10V
- 7 0V
- 8 30mV
- 9 6.4V
- 10 1.7V
- 11 1.7V
- 12 1.7V
- 13 2V
- 14 1.7V
- 15 1.7V
- 16 3V

TS203
- e 0V
- b 0.7V
- c 50mV

TS301
- e 0.2V
- b 0.6V
- c 2.8V

TS302
- e 0.2V
- b 0.6V
- c 2.8V

TS451

1	5V	9	8.2V
2	1.5V	10	0V
3	11V	11	12V
4	8V	12	1.6V
5	11V	13	0.7V
6	3.8V	14	1.2V
7	1.2V	15	0V
8	3V	16	1V

TS401
- e 1V
- b 1.5V
- c 6V

TS303
- e 0V
- b 0.6V
- c 0.1V

TS251

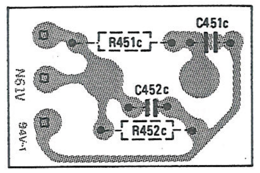
1	1.8V	9	5.8V
2	1.8V	10	5.8V
3	1.8V	11	11V
4	0V	12	5.5V
5	1.7V	13	0V
6	5.8V	14	0V
7	5.8V	15	0V
8	5.8V	16	0V

TS201
- e 0.9V
- b 1.6V
- c 11V

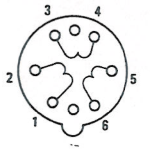
TS103
- e 4V
- b 4.6V
- c 12V

TS102
- e 1.2V
- b 1.8V
- c 12V

TS101
- s 0V
- g 0V
- d 11V


R451c
C451c
C452c
R452c
M61V
94V-1

S101



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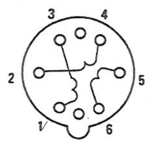
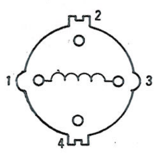


S104



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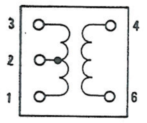

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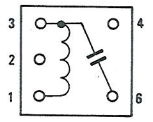

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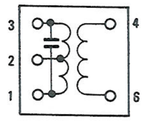

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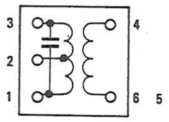
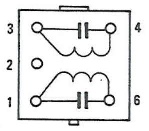
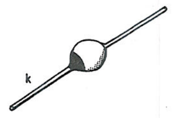


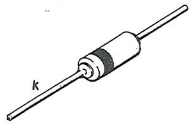
S201



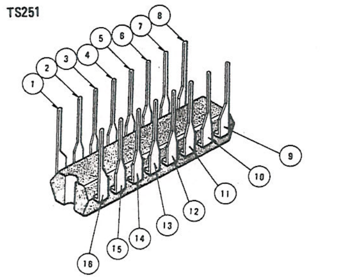
D205



D203 D204 D401



TS251


1
2
3
4
5
6
7
8
9
10
11
12
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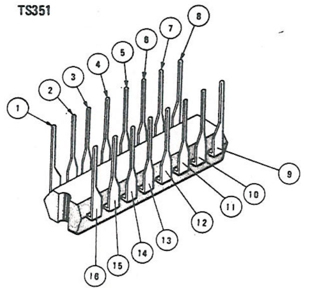
14
15
16

TS351


1
2
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11
12
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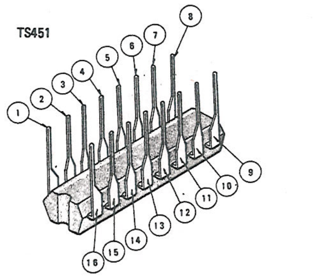
14
15
16

TS451


1
2
3
4
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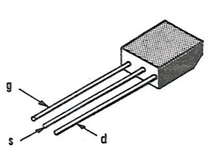
6
7
8
9
10
11
12
13
14
15
16

TS101



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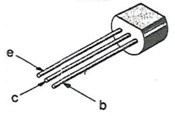
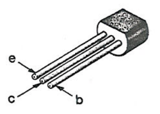
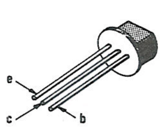


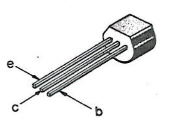
TS103



TS301 TS302



TS201 TS203 TS303 TS401



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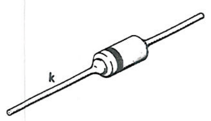
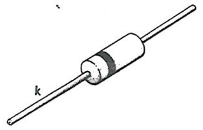
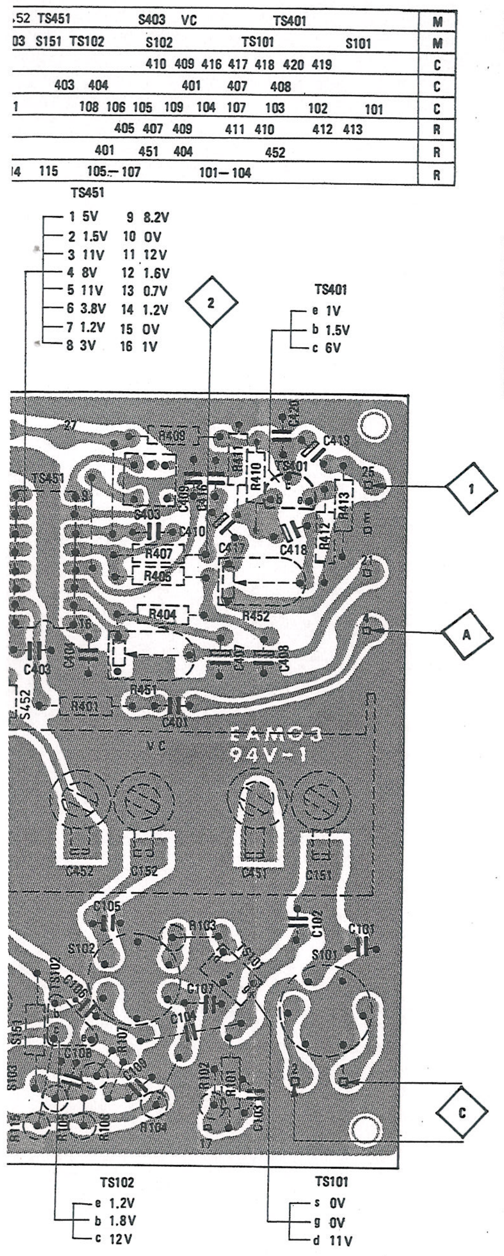


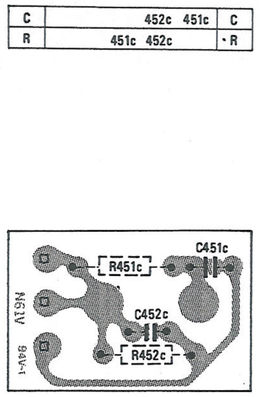
D201 D202



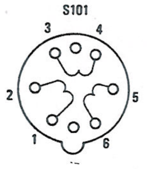
12944 D10

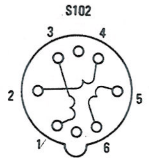


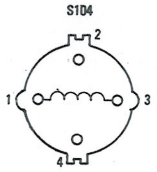
.52 TS451 S403 VC TS401 M
03 S151 TS102 S102 TS101 S101 M
410 409 416 417 418 420 419 C
403 404 401 407 408 C
1 108 106 105 109 104 107 103 102 101 C
405 407 409 411 410 412 413 R
401 451 404 452 R
4 115 105—107 101—104 R
TS451
1 5V
2 1.5V
3 11V
4 8V
5 11V
6 3.8V
7 1.2V
8 3V
9 8.2V
10 0V
11 12V
12 1.6V
13 0.7V
14 1.2V
15 0V
16 1V
2
TS401
e 1V
b 1.5V
c 6V
1
A
C
EAM03
94V-1
TS102
e 1.2V
b 1.8V
c 12V
TS101
s 0V
g 0V
d 11V

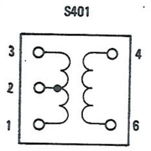


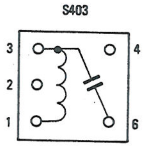
C 452c 451c C
R 451c 452c R
C451c
R451c
C452c
R452c
94V-1

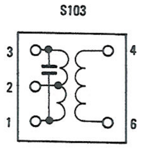


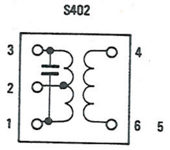


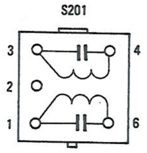


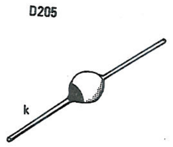


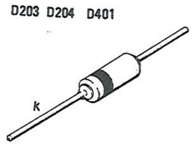




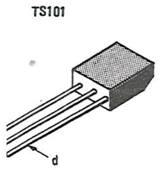


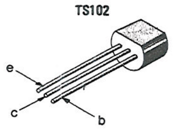


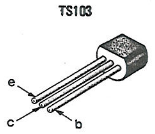


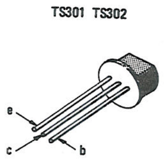


D203 D204 D401
k

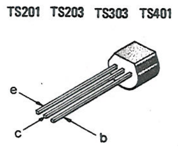




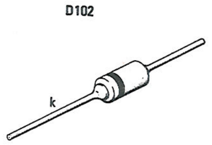


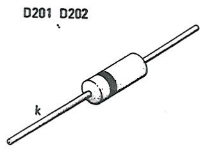


TS301 TS302
e
c
b



TS201 TS203 TS303 TS401
e
c
b





12944D10

SK Input selector	Signal to	◇	Trimming point	Adjust	Unit (U)	Indication
AM	452 kHz (460 kHz) (468 kHz) Δf = 20 kHz (50 Hz) via 10 nF	◇A	Max. cap.	[1] S402		◇1 Max. + symm.
	600 kHz 1400 kHz	◇B	[2] [3]	S401 C452		◇2 max.
	600 kHz 1400 kHz		[2] [3]	S451 C451		
	1000 kHz 200 µV		[4] Tune in	R451		Signal meter scale: 3
	1000 kHz 1 mV		[4] Tune in	R452		◇1 200 mV~
FM AFC off	98 MHz	◇C	[7] Tune in	S103		◇3 max.
	98 MHz Δf ± 75 kHz	◇C	[7] Tune in	S201a S201b		◇4 min. ◇5 or ◇6 [5]
	90 MHz Δf ± 75 kHz	◇C	[6]	S104		◇5 or ◇6 max.
	106 MHz Δf ± 75 kHz		[8]	C153		◇4 min.
	90 MHz Δf ± 75 kHz	◇C	[6]	S101, S102		◇5 or ◇6
	106 MHz Δf ± 75 kHz		[8]	C151,C152		
FM mute	98 MHz 10 µV	◇C	[7] Tune in	R251		◇5 or ◇6 [11]

[1] Turn out the cores of coils so that these cores are flush with the upper edges of the coil cans.

[2] Set the pointer to 600 kHz.

[3] Set the pointer to 1400 kHz.

[4] Set the pointer to 1000 kHz.

[5] Adjust for minimum distortion.

[6] Set the pointer to 90 MHz.

[7] Set the pointer to 98 MHz.

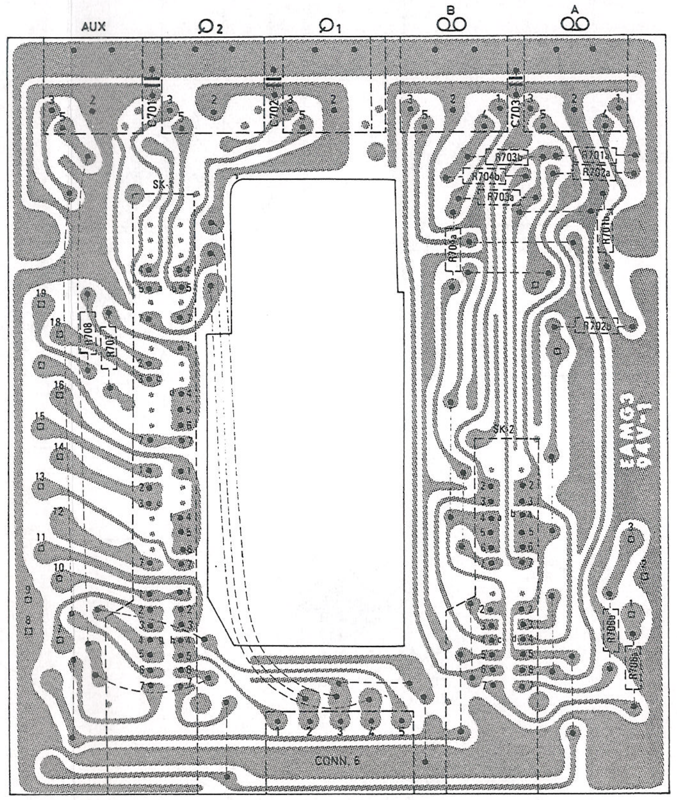
[8] Set the pointer to 106 MHz.

[9] Use frequency counter.

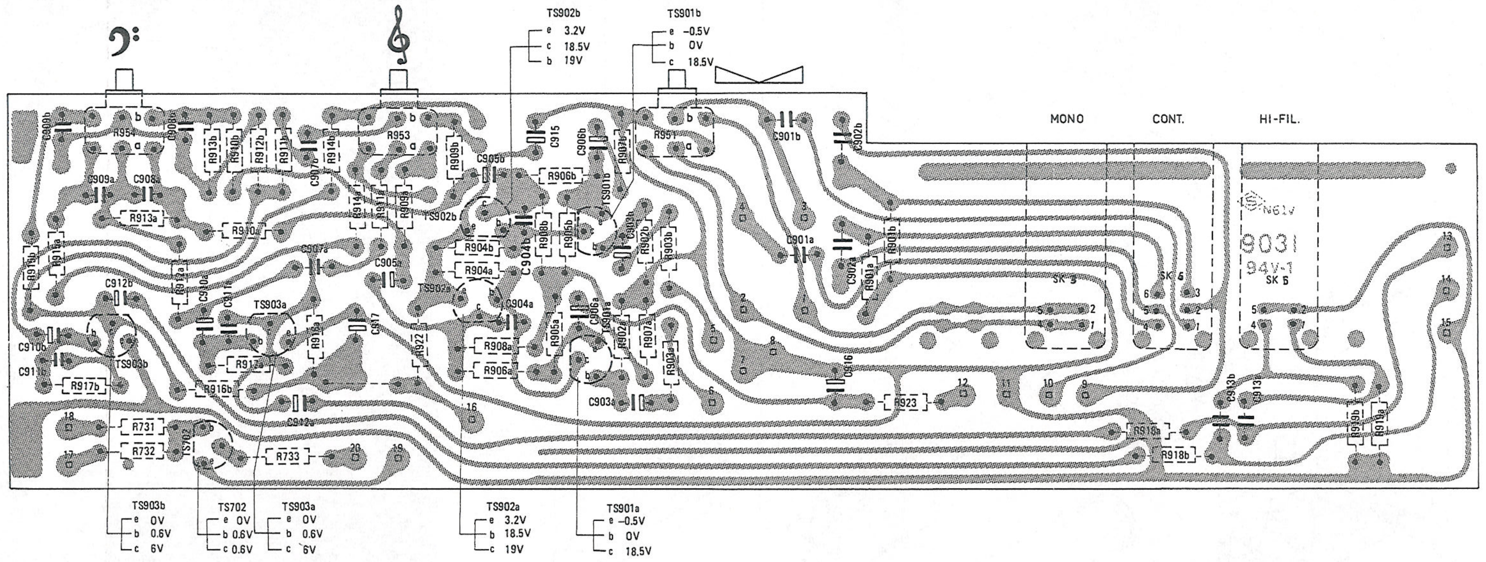
[10] Adjust for the same output level of ◇6 and ◇5

[11] Adjust for just disappear point of output signal at ◇5 or ◇6 .

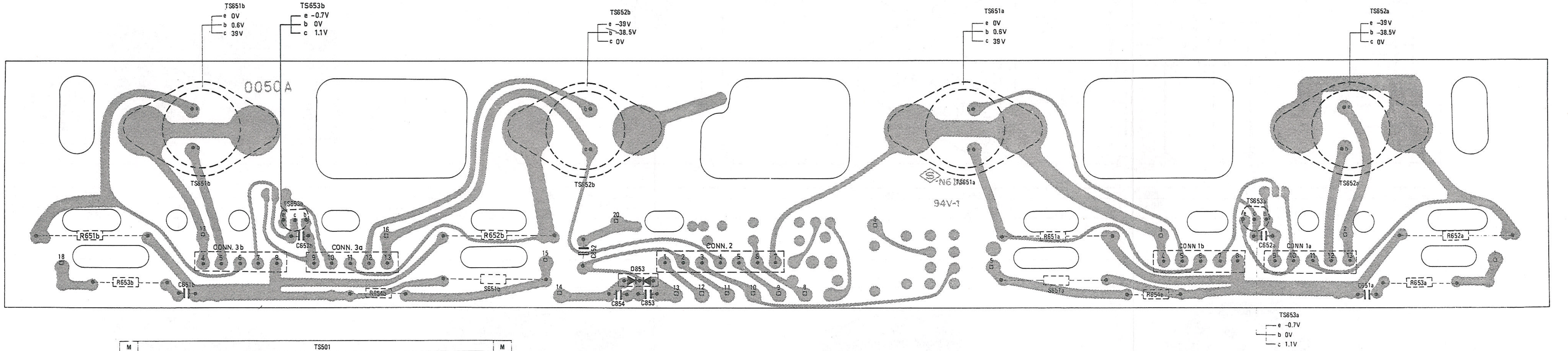
M	SK-1 SK-2	M
C	701 702 703	C
R	708 707 704a 704b 703b 703a 701a 702a 701b 702b 706b 706a	R


AUX
B
A
SK-1
SK-2
R703b
R704b
R701b
R702a
R702b
R707
R708
C701
C702
C703
CONN. 6
EAMG3
94V-1

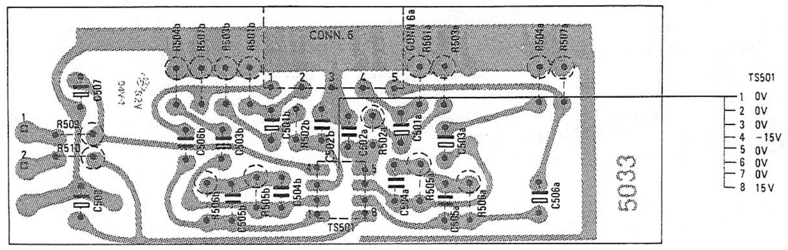
M	TS903b TS702 TS903a TS902a TS902b TS901a TS901b SK-3 SK-5 SK-5	M
C	909b 909a 908a 908b 907b 907a 905a 905b 915 906b 903b 901b 901a 902b 902a	C
C	910b 911b 912b 910a 911a 912a 917 904a 904b 906a 903a 916 913b 913a	C
R	915b 915a 913a 912a 910b – 913b 910a 914b 914a 911a 909a 909b 904b 904a 908b 906b 905b 907b 902b 903b 901a 901b	R
R	917b 954 731 732 916b 917a 733 916a 953 922 908a 906a 905a 902a 907a 903a 951 923 918a 918b 919b 919a	R

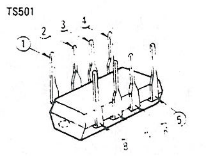

TS902b
e 3.2V
c 18.5V
b 19V
TS901b
e -0.5V
b 0V
c 18.5V
MONO
CONT.
HI-FIL.
SK 3
SK 5
SK 5
9031
94V-1
R954
R953
R951
R923
R731
R732
R733
TS702
TS903b
e 0V
b 0.6V
c 6V
TS702
e 0V
b 0.6V
c 0.6V
TS903a
e 0V
b 0.6V
c 6V
TS902a
e 3.2V
b 18.5V
c 19V
TS901a
e -0.5V
b 0V
c 18.5V

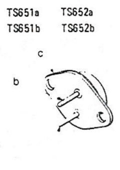
M	TS651b TS653b S651b TS652b D853 TS651a S651a TS653a TS652a	M
C	651b 652b 852 854 853 652a 651a	C
R	651b 653b 654b 652b 651a 654a 653a 652a	R

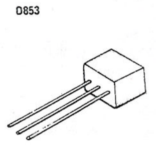

TS651b
e 0V
b 0.6V
c 39V
TS653b
e -0.7V
b 0V
c 1.1V
TS652b
e -39V
b -38.5V
c 0V
TS651a
e 0V
b 0.6V
c 39V
TS652a
e -39V
b -38.5V
c 0V
0050A
94V-1
CONN. 3b
CONN. 3a
CONN. 2
CONN. 1b
CONN. 1a
R651b
R652b
R653b
R654b
S651b
C651b
C652b
C652
D853
C854
C853
R651a
R652a
R653a
R654a
S651a
C651a
C652a
TS653a
e -0.7V
b 0V
c 1.1V

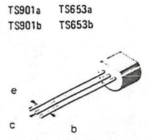
M	TS501	M
C	507 508 506b 503b 505b 501b 504b 502b 502a 504a 501a 503a 505a 506a	C
R	509 510 504b 507b 506b 503b 501b 505b 502b 502a 501a 505a 503a 506a 504a 507a	R

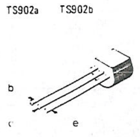

CONN. 6
CONN. 6a
5033
TS501
R509
R510
C507
C508
TS501
1 0V
2 0V
3 0V
4 -15V
5 0V
6 0V
7 0V
8 15V

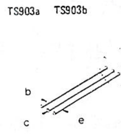

TS501
①
2
3
4
5
8

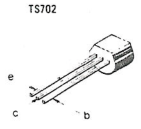

TS651a TS652a
TS651b TS652b
c
b




TS901a TS653a
TS901b TS653b
e
c
b

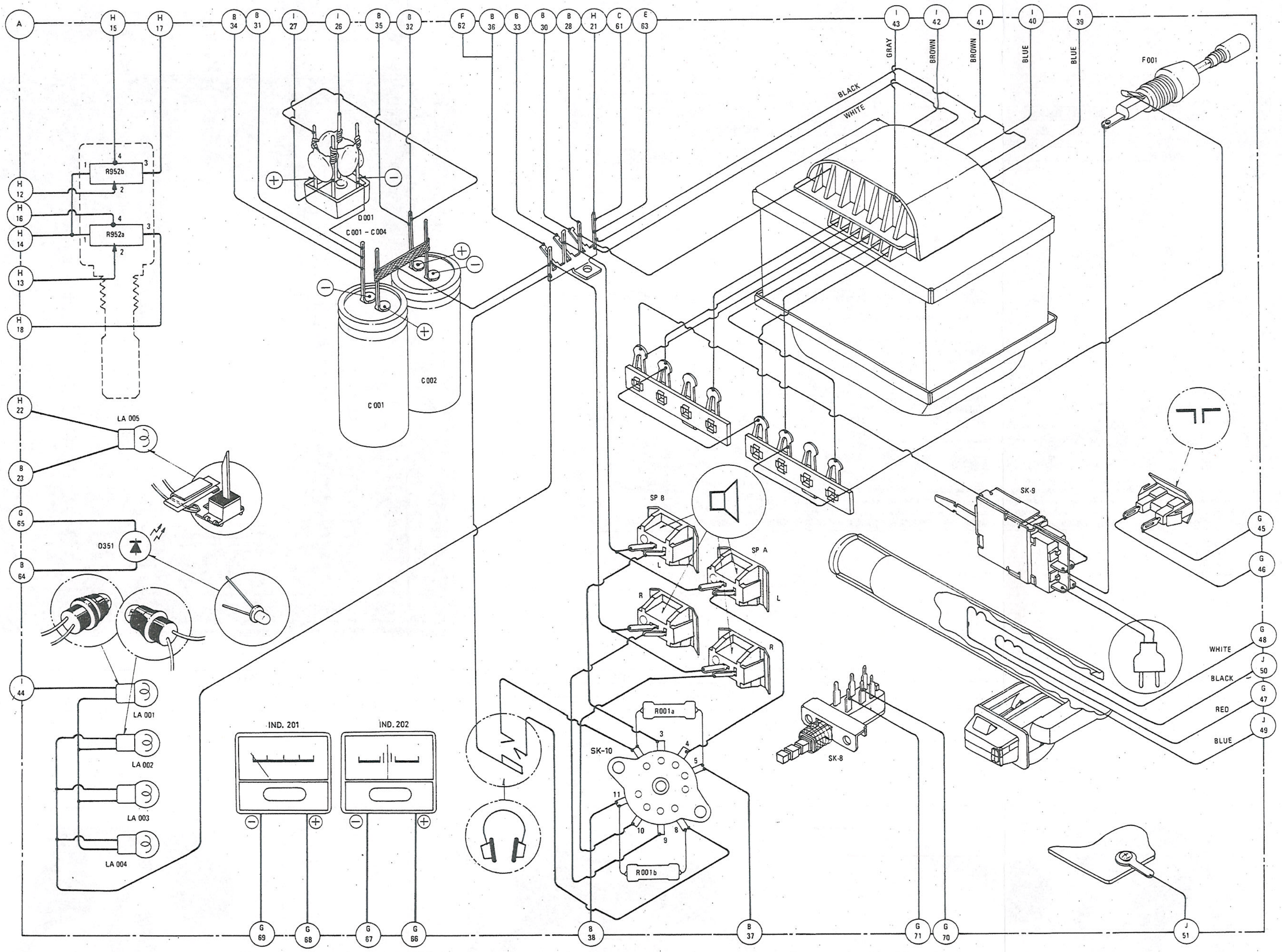

TS902a TS902b
b
e


TS903a TS903b
b
c
e

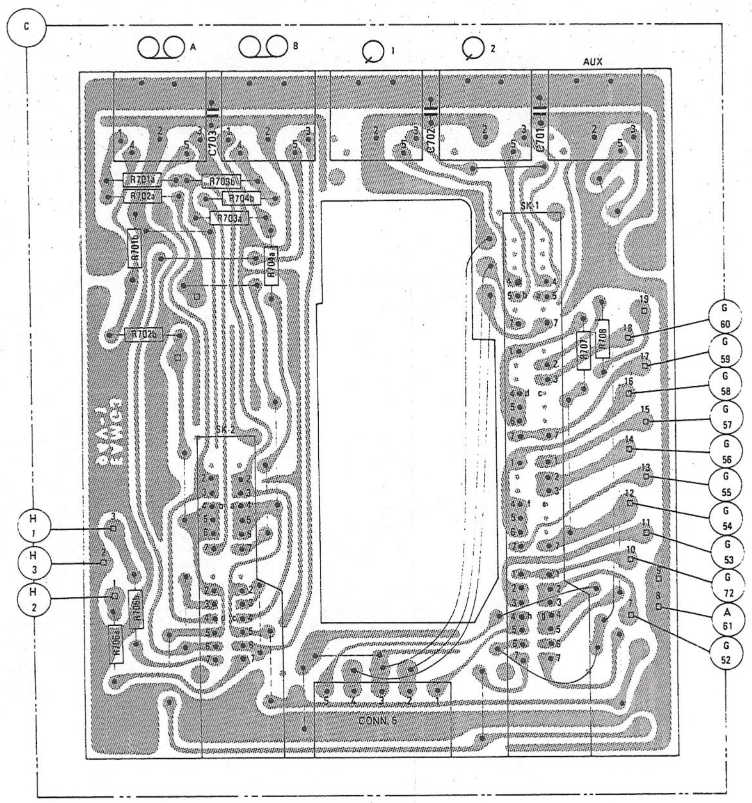


12949E10

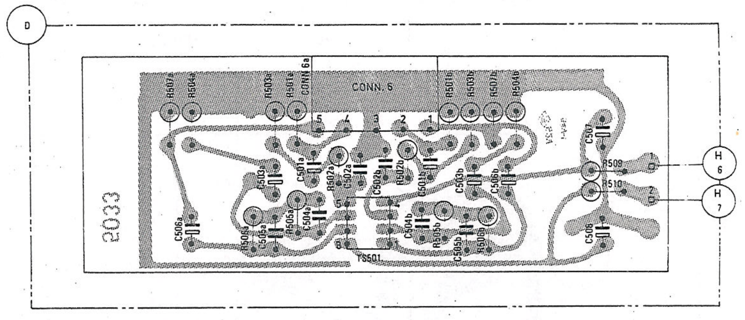
CS59112


A
H 15
H 17
B 34
B 31
I 27
I 26
B 35
B 32
F 62
B 36
B 33
B 30
B 28
H 21
C 61
E 63
I 43
I 42
I 41
I 40
I 39
GRAY
BROWN
BROWN
BLUE
BLUE
BLACK
WHITE
F 001
R952b
R952a
H 12
H 16
H 14
H 13
H 18
D 001
C 001 - C 004
C 001
C 002
H 22
B 23
LA 005
G 65
D351
B 64
I 44
LA 001
LA 002
LA 003
LA 004
SP B
SP A
L
R
SK-9
SK-10
SK-8
R001a
R001b
IND. 201
IND. 202
WHITE
BLACK
RED
BLUE
G 45
G 46
G 48
J 50
G 47
J 49
G 69
G 68
G 67
G 66
B 38
B 37
G 71
G 70
J 51

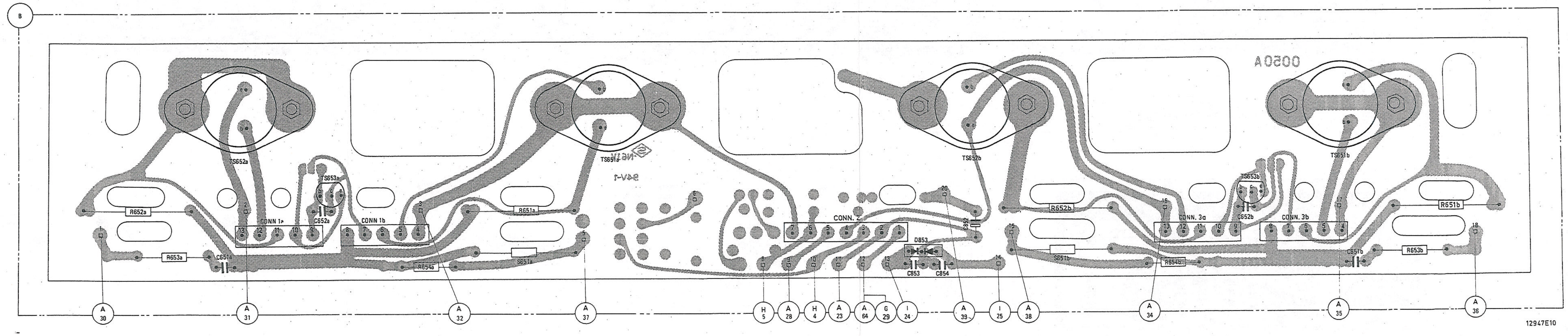
M	SK-2	SK-1	M
C	703	702 701	C
R	706a 706b 701a 702a 701b 702b 703b 703a 704b 704a	707 708	R


C
A
B
1
2
AUX
SK-1
SK-2
CONN. 5
G 60
G 59
G 58
G 57
G 56
G 55
G 54
G 53
G 72
A 61
G 52
H 1
H 3
H 2

M	TS501	M
C	506a 503a 505a 501a 504a 502a 502b 504b 501b 505b 503b 506b 507 508	C
R	507a 504a 506a 503a 501a 505a 502a 502b 505b 501b 503b 506b 507b 504b 509 510	R


D
CONN. 6
CONN. 6a
2033
TS501
H 6
H 7

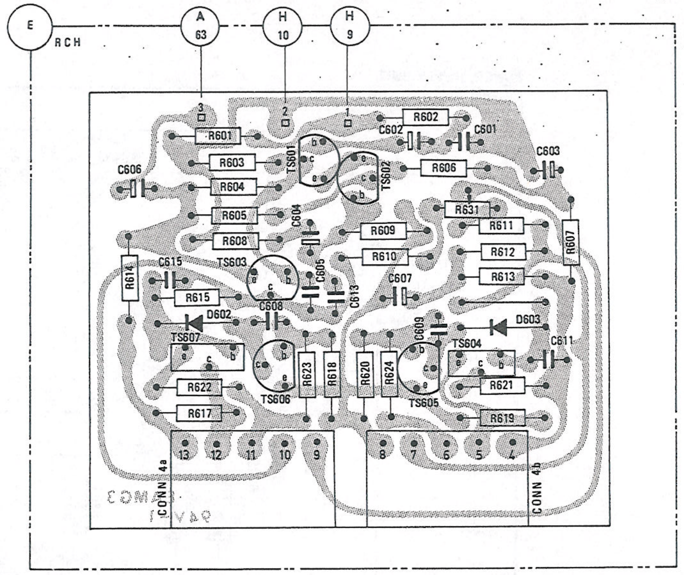
M	TS652a TS653a S651a TS651a D853 TS652b S651b TS653b TS651b	M
C	651a 652a C853 C854 852 652b 651b	C
R	652a 653a 654a 651a 652b 654b 653b 651b	R


B
TS652a
TS653a
TS651a
TS652b
TS653b
TS651b
CONN 1a
CONN 1b
CONN. 2
CONN. 3a
CONN. 3b
R652a
R653a
R654a
R651a
R652b
R654b
R653b
R651b
S651a
S651b
C651a
C652a
C651b
C652b
C853
C854
D853
A 30
A 31
A 32
A 37
H 5
A 28
H 4
A 23
A 64
G 29
I 24
A 39
I 25
A 38
A 34
A 35
A 36

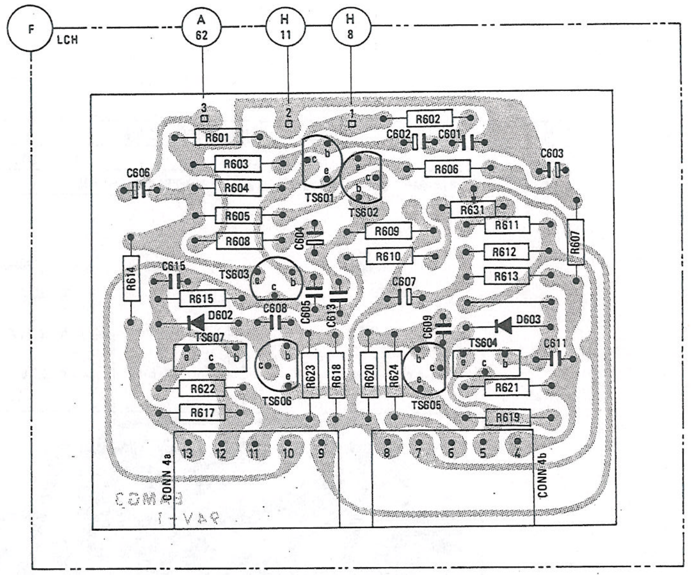
12947E10

CS59113

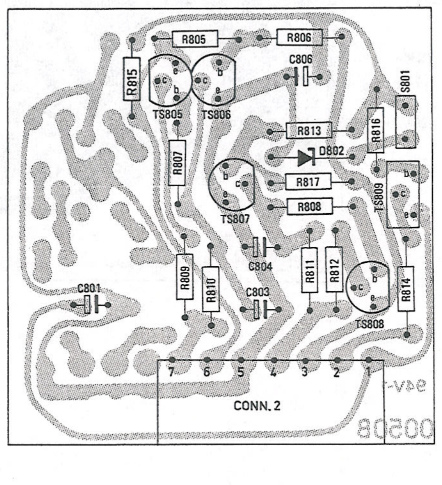
M	D602 TS607 TS603 TS606 TS601 TS602 TS605 TS604 D603	M
C	606 615 608 604 605 613 607 602 609 601 611 603	C
R	601 603 – 605 608 609 610 602 606 631 611 – 613 607	R
R	614 622 617 615 623 618 620 624 621 619	R


E
RCH
A 63
H 10
H 9
CONN 4a
CONN 4b

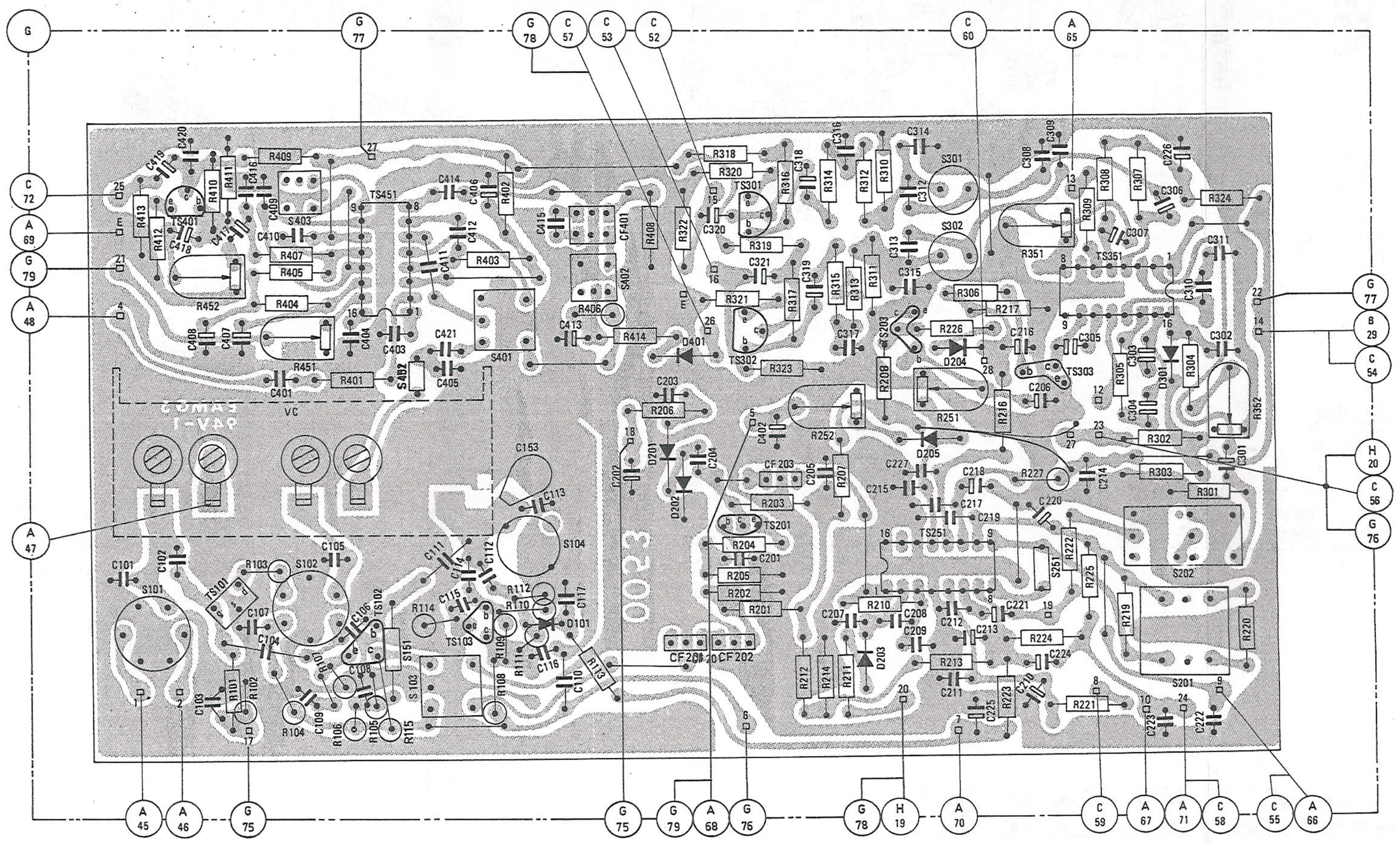
M	D602 TS607 TS603 TS606 TS601 TS602 TS605 TS604 D603	M
C	606 615 608 604 605 613 607 602 609 601 611 603	C
R	601 603 – 605 608 609 610 602 606 631 611 – 613 607	R
R	614 622 617 615 623 618 620 624 621 619	R


F
LCH
A 62
H 11
H 8
CONN 4a
CONN 4b

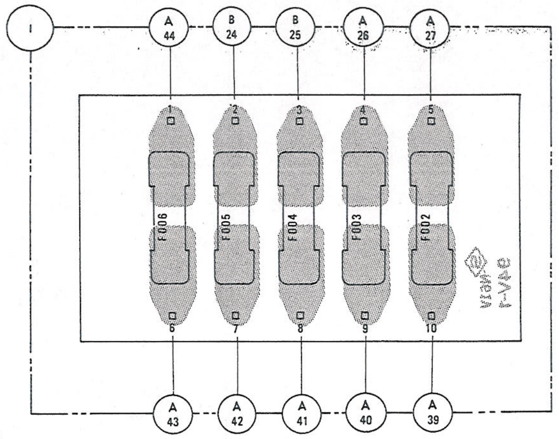
M	TS805 TS806 TS807 D802 TS808 TS809 S801	M
C	801 804 803 806	C
R	815 807 809 805 810 817 808 806 811 813 816 814	R



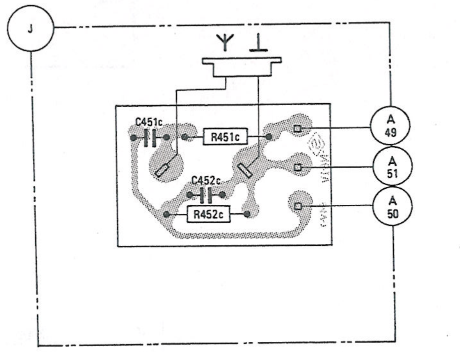
M	TS401 VC S403 TS451 S452 S401 D101 CF401 S402 TS302 TS301 CF203 TS203 S301 S302 D302 TS303 TS351 D301	M
M	S101 TS101 S102 TS102 S151 S103 TS103 S104 D201 D401 D202 CF201 CF202 TS201 D203 D205 D204 TS251 S251 S202 S201	M
C	419 420 418 417 416 409 410 411 414 412 406 415 320 318 316 313 312 314 308 309 307 306 226	C
C	408 407 401 404 403 421 405 113 153 413 202 203 204 321 402 319 205 317 215 227 315 211 218 216 206 305 214 303 304 310 302 301	C
C	101 102 103 107 104 109 105 106 108 111 115 114 112 116 110 117 201 207 208 209 212 217 219 213 225 221 210 220 224 223 222 311	C
R	413 412 410 411 409 407 405 403 402 408 322 318 320 319 316 314 312 310 351 309 308 307 324	R
R	452 404 451 401 406 414 206 321 323 317 207 315 252 313 311 208 251 226 216 217 227 305 302 303 304 301 352	R
R	101–104 105–107 114 115 108–113 201–205 212 214 211 210 213 223 224 222 221 225 219 220	R


G
G 77
G 78
C 57
C 53
C 52
C 60
A 65
C 72
A 69
G 79
A 48
A 47
G 77
B 29
C 54
H 20
C 56
G 76
A 45
A 46
G 75
G 75
G 79
A 68
G 76
G 78
H 19
A 70
C 59
A 67
A 71
C 58
C 55
A 66
VC

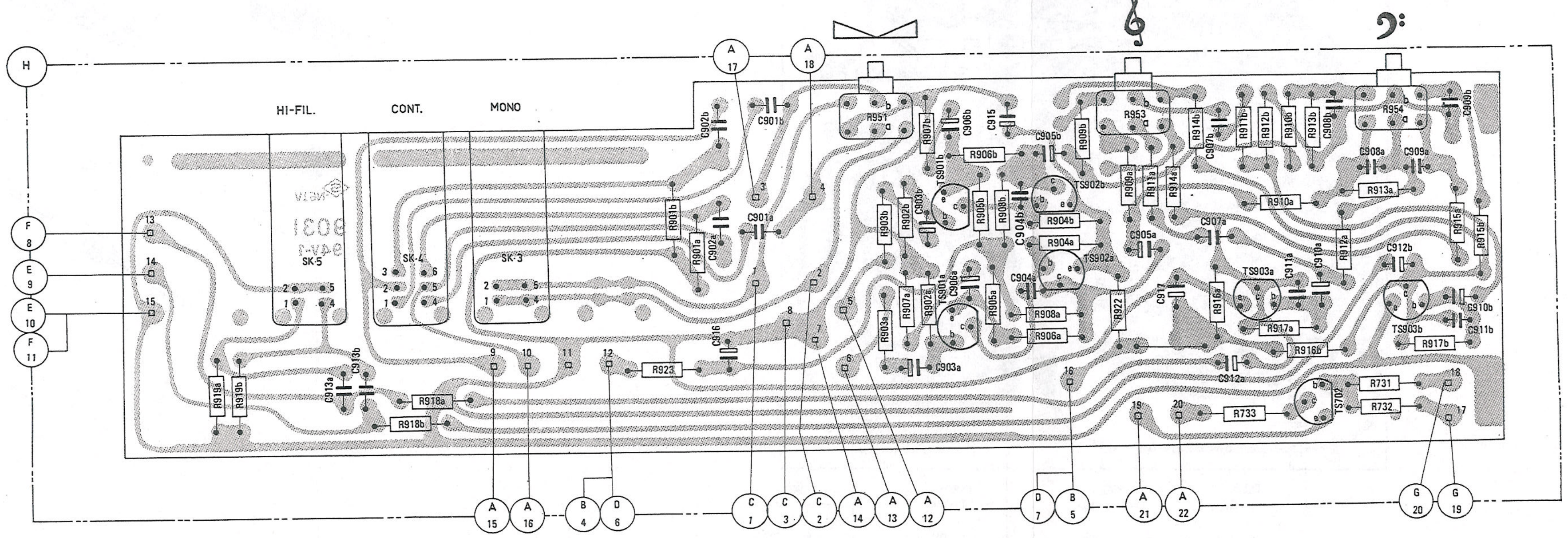
M	F006 F005 F004 F003 F002	M


I
A 44
B 24
B 25
A 26
A 27
F006
F005
F004
F003
F002
A 43
A 42
A 41
A 40
A 39

C	451c 452c	C
R	452c 451c	R


J
C451c
R451c
C452c
R452c
A 49
A 51
A 50

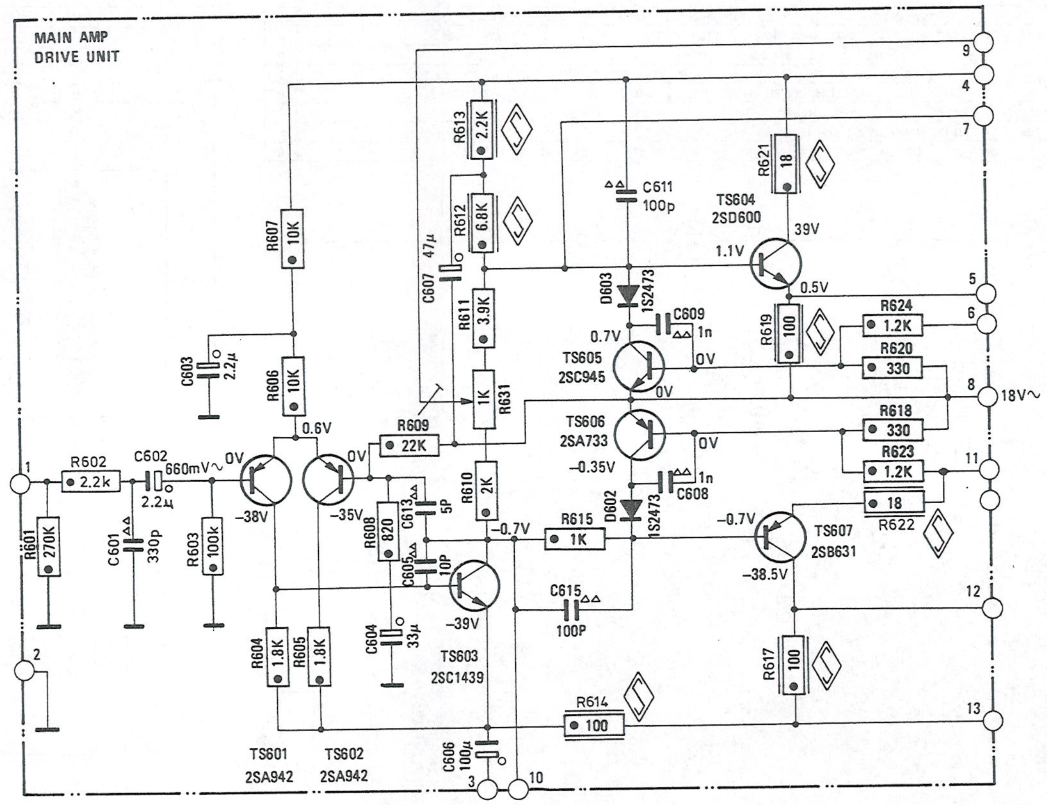
M	SK-5 SK-4 SK-3 TS901b TS901a TS902b TS902a TS903a TS702 TS903b	M
C	902b 902a 901a 901b 903b 906b 915 905b 905a 907a 907b 908b 908a 912b 909a 909b	C
C	913a 913b 916 903a 906a 904a 904b 917 912a 911a 910a 910b 911b	C
R	901b 901a 903b 902b 907b 906b 905b 908b 904b 904a 909b 909a 911a 914a 914b 910b – 913b 910a 912a 913a 915a 915b	R
R	919a 919b 918b 918a 923 951 903a 907a 902a 905a 908a 906a 922 953 916a 733 917a 916b 731 732 954 917b	R


H
HI-FIL.
CONT.
MONO
SK-5
SK-4
SK-3
A 17
A 18
F 8
E 9
E 10
F 11
A 15
A 16
B 4
D 6
C 1
C 3
C 2
A 14
A 13
A 12
D 7
B 5
A 21
A 22
G 20
G 19

12948E10

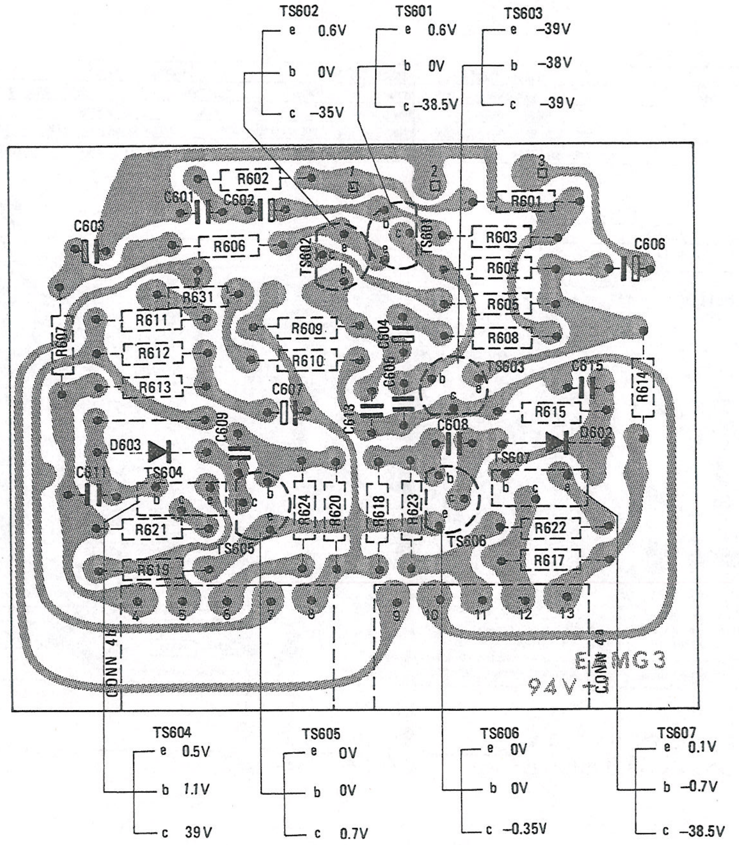
CS5911

MAIN AMP DRIVE UNIT



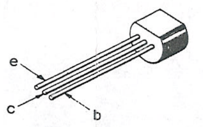
1
2
3
4
5
6
7
8
9
10
11
12
13
18V~
R601 270K
R602 2.2K
C601 330p
C602 2.2μ
660mV~
0V
R603 100K
C603 2.2μ
R606 10K
R607 10K
0.6V
-38V
-35V
R604 1.8K
R605 1.8K
TS601 2SA942
TS602 2SA942
R608 820
C613 5P
C605 10P
C604 33μ
-39V
TS603 2SC1439
C606 100μ
R609 22K
R610 2K
R631 1K
R611 3.9K
R612 6.8K
R613 2.2K
C607 47μ
D603 1S2473
D602 1S2473
C611 100p
C609 1n
C608 1n
0.7V
TS605 2SC945
TS606 2SA733
-0.35V
-0.7V
R615 1K
C615 100P
R614 100
TS604 2SD600
1.1V
39V
0.5V
R621 18
R619 100
R624 1.2K
R620 330
R618 330
R623 1.2K
R622 18
TS607 2SB631
-38.5V
R617 100

M	D603 TS604 TS605 TS602 TS601 TS606 TS603 TS607 D602	M
C	603 611 601 609 602 607 613 605 604 608 615 606	C
R	607 611 – 613 631 606 602 610 609 608 603 – 605 601	R
R	619 621 616 624 620 618 623 615 617 622 614	R

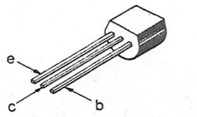


TS602
e 0.6V
b 0V
c -35V
TS601
e 0.6V
b 0V
c -38.5V
TS603
e -39V
b -38V
c -39V
R602
C601
C602
R601
C603
R606
R603
C606
R604
R605
R631
R611
R612
R613
R607
R609
R610
R608
C604
C605
C613
C607
C615
R615
R614
D603
C609
C611
TS604
R621
R619
TS605
R624
R620
R618
R623
C608
TS607
D602
TS606
R622
R617
CONN 4b
CONN 4a
EMG3
94V-1
1
3
4
5
6
7
8
9
10
11
12
13
TS604
e 0.5V
b 1.1V
c 39V
TS605
e 0V
b 0V
c 0.7V
TS606
e 0V
b 0V
c -0.35V
TS607
e 0.1V
b -0.7V
c -38.5V

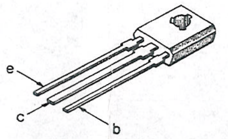
TS601
TS602



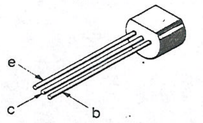
TS603



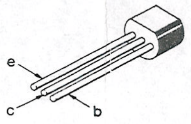
TS604



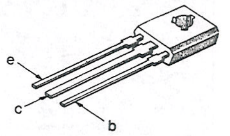
TS605
TS806



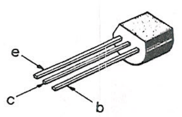
TS606
TS807



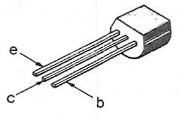
TS607



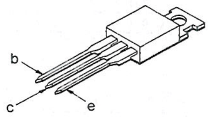
TS805



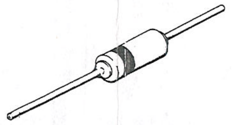
TS808



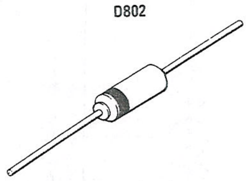
TS809



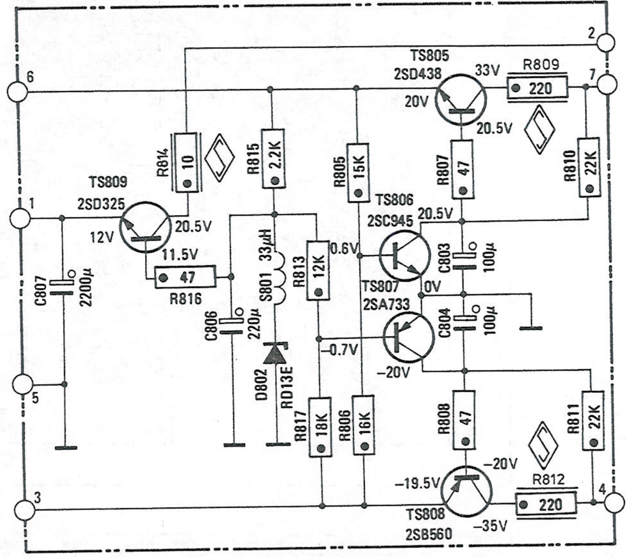
D602
D603



D802

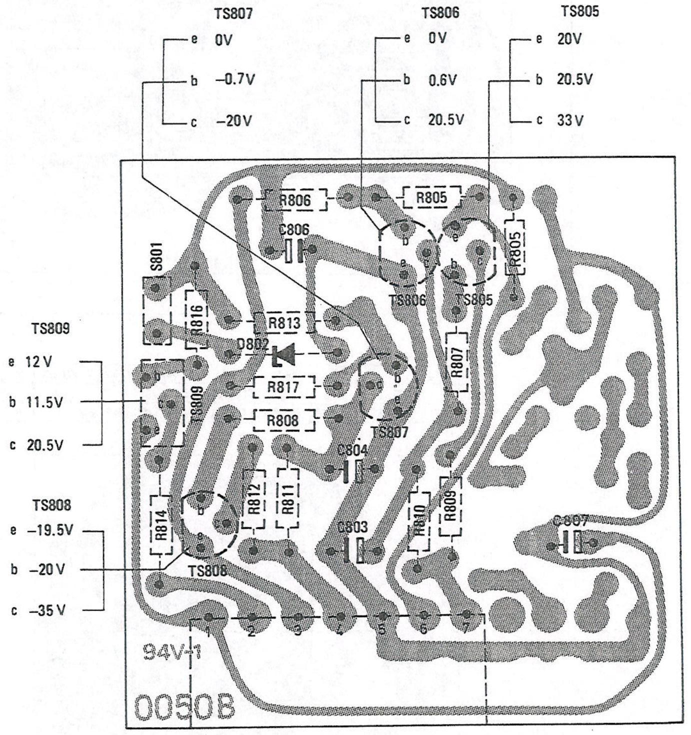


POWER SUPPLY UNIT



1
2
3
4
5
6
7
TS805 2SD438
33V
20V
20.5V
R809 220
R810 22K
R807 47
R805 15K
R815 2.2K
R814 10
TS809 2SD325
12V
20.5V
11.5V
R816 47
C807 2200μ
C806 220μ
S801 33μH
D802 RD13E
R813 12K
R817 18K
0.6V
TS806 2SC945
C803 100μ
TS807 2SA733
0V
-0.7V
-20V
C804 100μ
R806 16K
R808 47
R811 22K
-19.5V
-20V
TS808 2SB560
-35V
R812 220

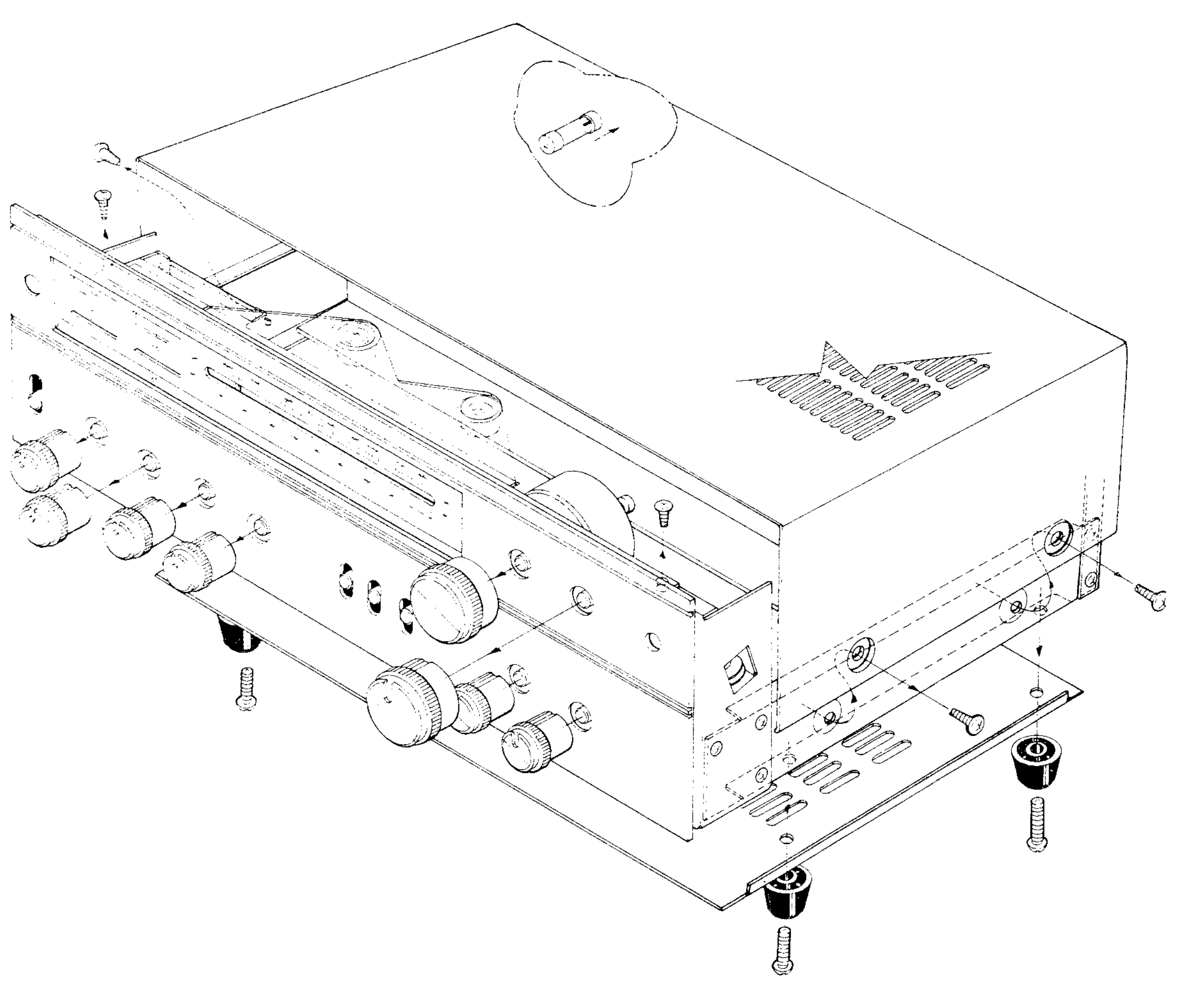
M	S801 TS809 TS808 D802 TS807 TS806 TS805	M
C	806 803 804 801	C
R	814 816 811–813 806 808 817 810 805 809 807 815	R



TS807
e 0V
b -0.7V
c -20V
TS806
e 0V
b 0.6V
c 20.5V
TS805
e 20V
b 20.5V
c 33V
TS809
e 12V
b 11.5V
c 20.5V
TS808
e -19.5V
b -20V
c -35V
R806
R805
C806
S801
R816
R813
D802
R809
R817
R808
R807
C804
R812
R811
R814
C803
R810
R809
C807
TS806
TS805
TS807
1
2
3
4
5
6
7
94V-1
0050B

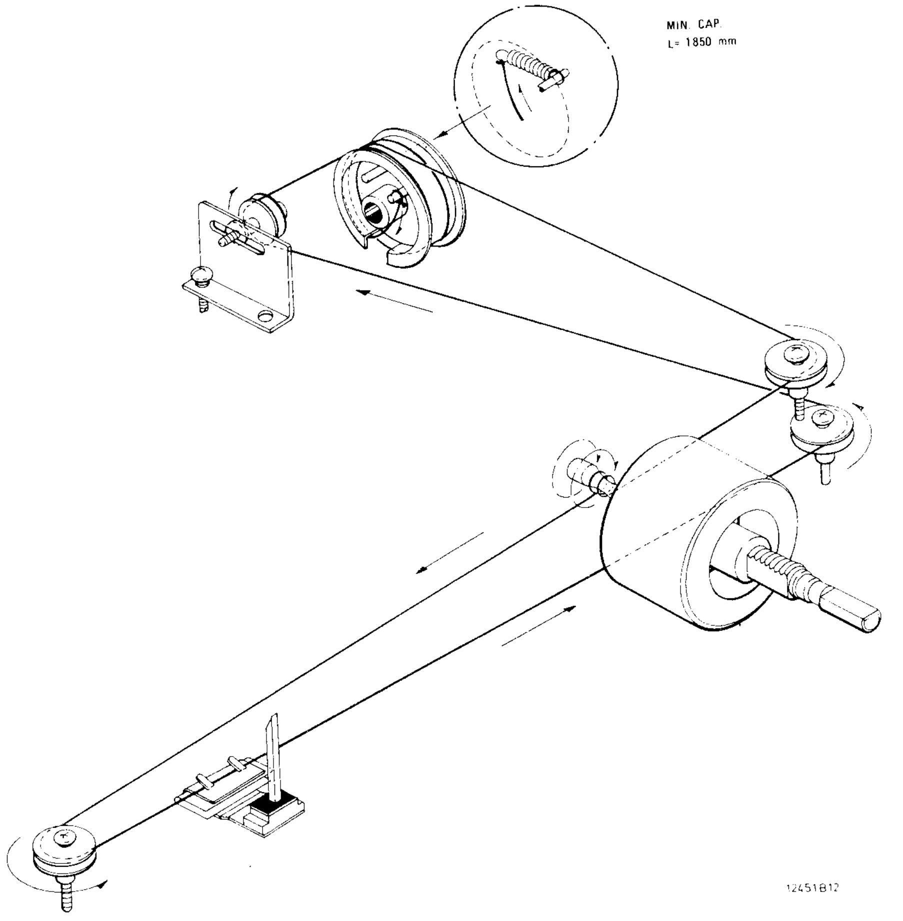
CS59115

12943D10



Overdrive protection circuits

Transistors TS606 and TS605 protect the audio output stage when abnormally high current flows through TS651 and TS652, caused by excessive drive at input, or too low impedance load is connected at output.
If increase of the current is excessive, the voltage across R651 and R652 will turn on TS606 and TS605 which are normally not biased "on".
The collector potential of these transistors (through D601 and D602 diodes) reduce bias on TS604 and TS607, which causes output transistor current (TS651 and TS652) to reduce.



MIN CAP
L= 1850 mm
12451B12

SPEAKERS

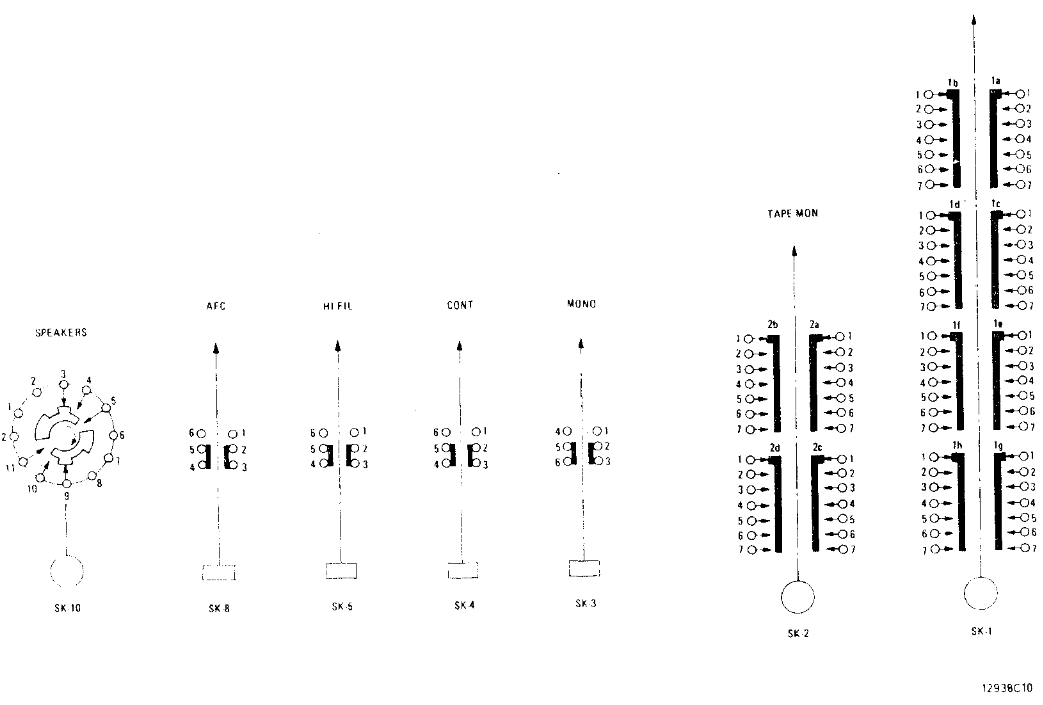
	left	right
A	4	10
B	3	9
COMM	5	11

TAPE MONITOR

1	NOT USED
2	SOURCE MON
3	DUBBING a b
4	A PLAY
5	SOURCE
6	B PLAY
7	COMMON

SELECTOR

1	AM
2	FM
3	FM MUTE
4	PHONO 1
5	PHONO 2
6	AUX
7	COMMON



SPEAKERS
AFC
HI FIL
CONT
MONO
TAPE MON
SELECTOR
SK 10
SK 8
SK 5
SK 4
SK 3
SK 2
SK 1
12938C10

TUNER

- C -

103	cer. cap. 22 nF	4822 121 40407
104	minic. cap. 0.5 pF	4822 122 31212
107	cer. cap. 22 nF	4822 121 40407
109	cer. cap. 10 nF	4822 121 50582
110	cer. cap. 22 nF	4822 121 40407
111	minic. cap. 0.5 pF	4822 122 31212
112	cer. cap. 5 pF	4822 122 40103
116-117	cer. cap. 22 nF	4822 121 40407
154a	varco	4822 125 20201
201	cer. cap. 10 nF	4822 121 50582
205	cer. cap. 10 nF	4822 121 50582
207 ÷ 209	cer. cap. 40 nF	4822 121 40413
210	elco 4.7 μF - 25 V	5322 124 24104
211	cer. cap. 40 nF	4822 121 40413
214-215	cer. cap. 40 nF	4822 121 40413
217	cer. cap. 40 nF	4822 121 40413
219	cer. cap. 40 nF	4822 121 40413
222-223	cer. cap. 22 nF	4822 121 40407
227	cer. cap. 40 nF	4822 121 40413
302	styrol cap. 1500 pF	4822 120 31112
303	elco BP 0.22 μF - 50 V	4822 124 20633
304	elco BP 0.47 μF - 50 V	4822 124 10211
305	elco BP 0.22 μF - 50 V	4822 124 20633
306-307	elco low leak 0.33 μF-50 V	4822 124 10212
308-309	cer. cap. 5600 pF	4822 121 50625
318	elco lo-leak 0.1 μF	4822 124 10209
319	elco lo-leak 0.1 μF	4822 124 10209
401	cer. cap. 10 nF	4822 121 50582
403	cer. cap. 10 nF	4822 121 50582
404	cer. cap. 40 nF	4822 121 40413
407-408	elco 4.7 μF - 25 V	5322 124 24104
410 ÷ 412	cer. cap. 10 nF	4822 121 50582
414	cer. cap. 10 nF	4822 121 50582
418	elco lo-leak 0.1 μF	4822 124 10209
419	elco lo-leak 0.1 μF	4822 124 10209
420	cer. cap. 10 nF	4822 121 50582

- R -

222	carbon res. 5.1 kΩ, ¼ W	5322 116 54595
224	carbon res. 20 kΩ, ¼ W	5322 116 54642
251	trimpot. 100 kΩ	4822 100 10212
301	carbon res. 20 kΩ, ¼ W	5322 116 54642
351	trimpot. 1 kΩ, ¼ W	4822 100 10215
352	trimpot. 5 kΩ, ¼ W	4822 100 10209
451	trimpot. 300 Ω	4822 100 10216
452	trimpot. 50 kΩ	4822 100 10214

- CF -

201 ÷ 203	ceramic filter	4822 242 70259
401	ceramic filter 452 kHz	4822 242 70262
	ceramic filter 460 kHz	4822 242 70261
	ceramic filter 468 kHz	4822 242 70263

- S -

101	FM ant. coil	4822 156 60082
102	FM RF coil	4822 156 40669
103	FM IFT 207A	4822 153 50217
104	FM osc. coil	4822 156 20747
151	choke coil 0.8 μH	4822 157 40147
201	FM IFT 221D	4822 153 60101
202	FM LPF BL-21H	4822 153 90036
251	choke coil 18 μH	4822 156 20746
301-302	choke coil 39 mH	4822 156 20748
402	AM IFT 407A	4822 153 10313
403	AM IFT 407B	4822 153 10314
452	choke coil 0.8 μH	4822 157 40147

- TS -

101	2SK55	4822 130 41142
102	2SC1674 = BF494	5322 130 44195
103	2SC1675 = BF495	4822 130 40947
201	2SC930 = BF494	5322 130 44195
203	2SC536 = BC547	5322 130 44257
301-302	2SC1681 = BC550	5322 130 44591
303	2SC536 = BC547	5322 130 44257
401	2SC536 = BC547	5322 130 44257
731	2SC536 = BC547	5322 130 44257

- D -

102	1S2687 = BA102	5322 130 30272
201-202	1N60p = 2xAA119	4822 130 30312
203-204	1S2473 = BA221	4822 130 30831
205	KB-162 = BA216	5322 130 30702
301	1S2473 = BA221	4822 130 30831
351	LED GL-30PG	4822 130 30976
401	1S2473 = BA221	4822 130 30831

- TS - - IC -

251	HA1137	4822 209 80378
351	LA3350	4822 209 80379
451	HA1197	4822 209 80376

R.I.A.A. CORR. PRINT

- C -

501a-b	elco low leak 4.7 μF - 25 V	5322 124 10014
701 ÷ 703	cer. cap. 10 nF	4822 121 50582

- TS - - IC -

501a-b	NJM 4558 D-D	4822 209 80381

TONE CONTROL PRINT

- C -

905a-b	elco 2.2 μF - 25 V	4822 124 20482

- R -

901a-b	carbon res. 5.1 kΩ, ¼ W	5322 116 54595
918a-b	carbon res. 5.1 kΩ, ¼ W	5322 116 54595
951a-b	balance pot. 100 kΩ	4822 102 30251
952a-b	volume pot. 50+50 kΩ	4822 102 30249
953a-b	treble pot. 100 kΩ	4822 102 30252
954a-b	bass pot. 100 kΩ	4822 102 30252

- TS -

901a-b	2SC2089 = BC550	5322 130 44591
902a-b	2SA726	4822 130 41135
903a-b	2SC1313 = BC550	5322 130 44591

LF OUTPUT PRINT

- C -

853-854	cer. cap. 10 nF	4822 121 50582

- R -

653a-b	metal res. 10 Ω 2 W	5322 116 54348

- S -

651a-b	choke coil 3 μH	4822 157 40148

- TS -

651a-b	2SC1051	4822 130 41138
652a-b	2SC1051	4822 130 41138
653a-b	2SC945	5322 130 44148

- D -

853	DS17	4822 130 30978

L.F. DRIVE UNIT

- C -

602-603	elco 2.2 μF - 25 V	4822 124 20482
606	elco 100 μF	5322 124 24123

- R -

631	Trimpot. 1 kΩ	4822 100 10208

- TS -

601-602	2SA726	4822 130 41135
603	2SC1439 = BC639	4822 130 41053
604	2SD600 = BD139	5322 130 40823
605	2SC945 = BC407	5322 130 44148
606	2SA733 = BC557	5322 130 44256
607	2SB631 = BD140	5322 130 40824

- D -

602-603	1S2473 = BA221	4822 138 30831

POWER SUPPLY UNIT

- C -

807	elco 220 μF - 16 V	5322 124 24084

- S -

801	choke coil 33 μH	4822 156 20745

- TS -

805	2SD438	4822 130 41139
806	2SC945 = BC407	4822 130 41019
807	2SA733 = BC557	5322 130 44256
808	2SB560 = BC640	4822 130 41078
809	2SD325 = BD203	5322 130 44325

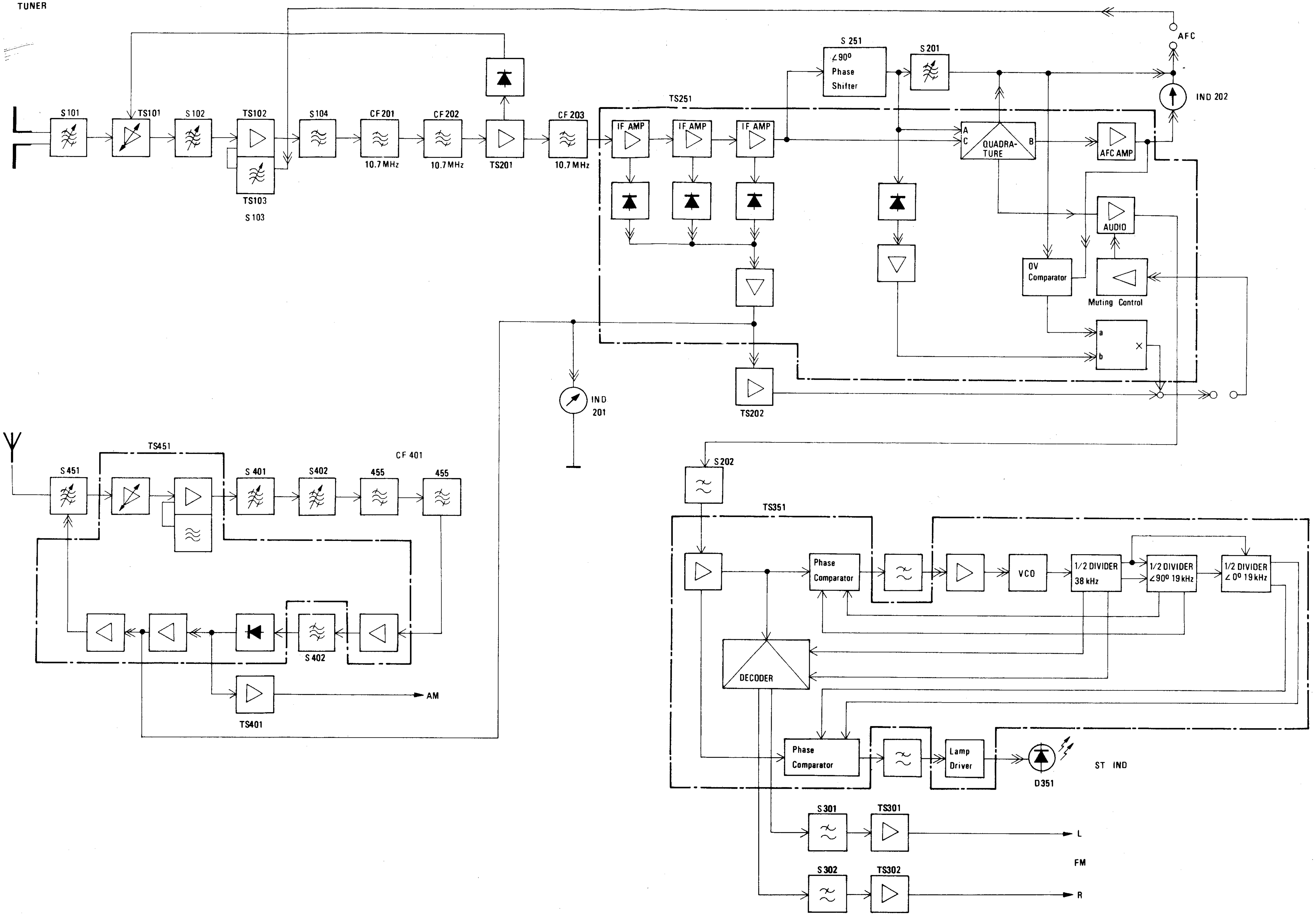
- D -

802	RD13E	

Miscellaneous

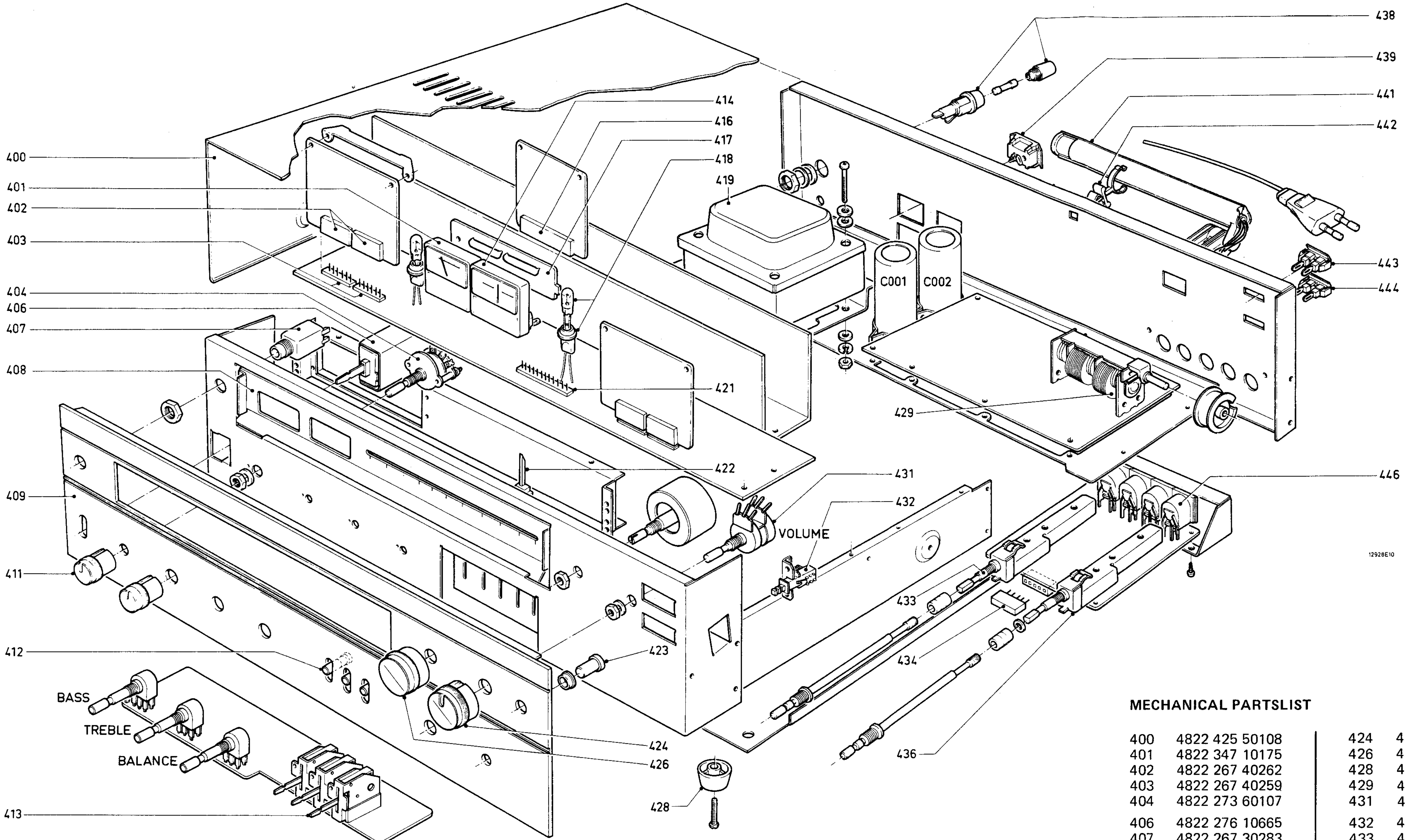
C001-002	elco 8200 μF	4822 124 40152
C003÷006	cer. cap. 10 nF	5322 122 50046
D001	S4VB-10	4822 130 30977
F001	Fuse 1.6 A	4822 253 30024
F002-003	Fuse 4 A	4822 253 30028
F004÷006	Fuse 1.6 A	4822 253 30024
	Fuse holder for PCB	4822 256 30154

BLOCK DIAGRAM
TUNER


S101
TS101
S102
TS102
TS103
S103
S104
CF201
10.7 MHz
CF202
10.7 MHz
TS201
CF203
10.7 MHz
TS251
IF AMP
IF AMP
IF AMP
S 251
∠90°
Phase
Shifter
S201
A
C
QUADRA-
TURE
B
AFC AMP
AFC
IND 202
AUDIO
0V
Comparator
Muting Control
a
b
×
TS202
IND
201
TS451
S451
S 401
S402
455
455
CF 401
S 402
TS401
AM
S202
TS351
Phase
Comparator
VCO
1/2 DIVIDER
38 kHz
1/2 DIVIDER
∠90° 19 kHz
1/2 DIVIDER
∠0° 19 kHz
DECODER
Phase
Comparator
Lamp
Driver
D351
ST IND
S301
TS301
L
FM
S302
TS302
R

12942C10

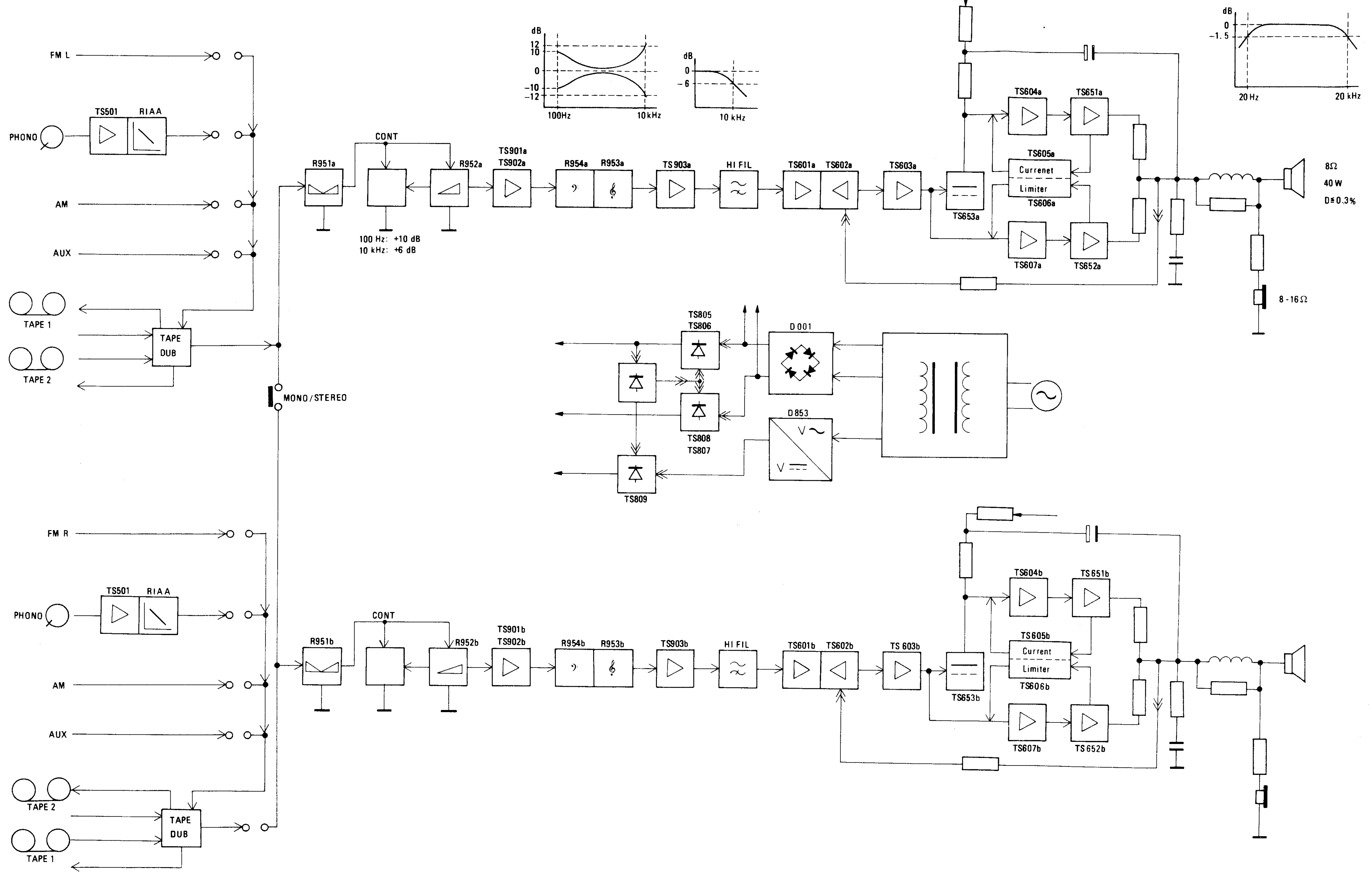
CS59107


438
439
441
442
443
444
400
401
402
403
404
406
407
408
409
411
412
413
414
416
417
418
419
421
422
423
424
426
428
429
431
432
433
434
436
446
C001
C002
VOLUME
BASS
TREBLE
BALANCE
12928E10

MECHANICAL PARTSLIST

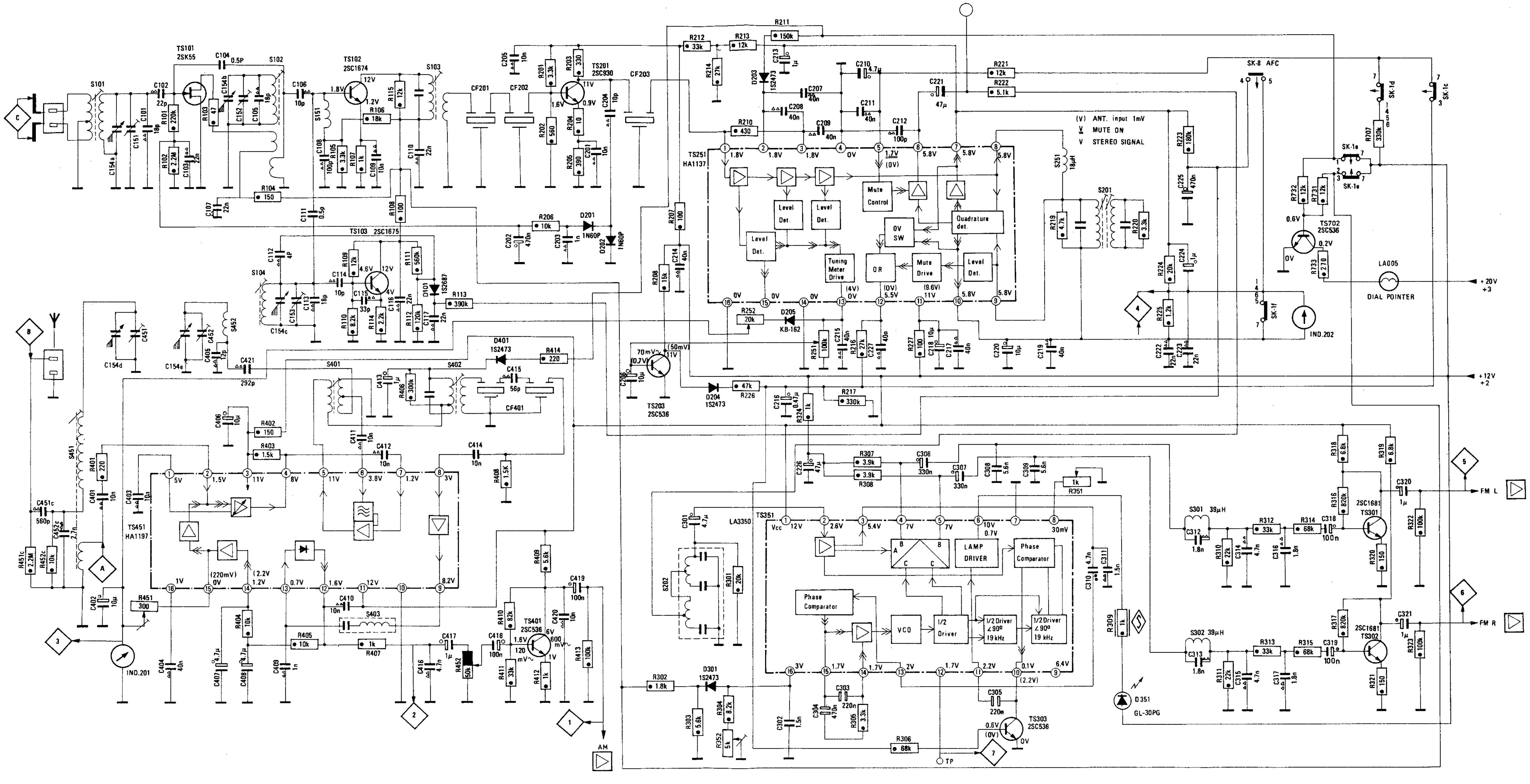
400	4822 425 50108	424	4822 413 50935
401	4822 347 10175	426	4822 413 50936
402	4822 267 40262	428	4822 462 71088
403	4822 267 40259	429	4822 125 20201
404	4822 273 60107	431	4822 102 30249
406	4822 276 10665	432	4822 276 10664
407	4822 267 30283	433	4822 276 10662
408	4822 333 50544	434	4822 267 40265
409	4822 426 50217	436	4822 276 10663
411	4822 413 40749	438	4822 256 40049
412	4822 413 30708	439	4822 267 30284
413	4822 277 10424	441	4822 158 60407
414	4822 347 10174	442	4822 256 90203
416	4822 267 40262	443	4822 267 40263
417	4822 134 90007	444	4822 267 40264
418	4822 134 40345	446	4822 267 40266
419	4822 146 40229		
421	4822 267 50237		
422	4822 450 80566		
423	4822 410 21906		

BLOCK DIAGRAM
AUDIO


FM L
PHONO
TS501
RIAA
AM
AUX
TAPE 1
TAPE 2
TAPE DUB
MONO/STEREO
R951a
CONT
R952a
100 Hz: +10 dB
10 kHz: +6 dB
TS901a
TS902a
R954a
R953a
TS903a
HI FIL
TS601a
TS602a
TS603a
TS653a
TS604a
TS651a
TS605a
Currenet
Limiter
TS606a
TS607a
TS652a
8Ω
40 W
D≤0.3%
8 - 16Ω
dB
12
10
0
-10
-12
100Hz
10kHz
dB
0
-6
10 kHz
dB
0
-1.5
20 Hz
20 kHz
TS805
TS806
D 001
TS808
TS807
D 853
V~
V ⎓
TS809
FM R
PHONO
TS501
RIAA
AM
AUX
TAPE 2
TAPE 1
TAPE DUB
R951b
CONT
R952b
TS901b
TS902b
R954b
R953b
TS903b
HI FIL
TS601b
TS602b
TS 603b
TS653b
TS604b
TS651b
TS605b
Current
Limiter
TS606b
TS607b
TS652b
12941C10

CS59108

M	S101 IND.201 TS101 S151 TS102 D101 S103 CF201 CF202 TS201 CF203 TS251 TS351 S251 TS731 TS301	M
M	S451 TS451 S452 S104 S401 S403 S402 D401 CF401 TS401 D201 D202 TS203 S202 D301 D204 D203 D205 TS303 S201 D351 S301 S302 IND.202 TS302 LA 005	M
C	151 101 102 103 104 152 105 112 106 111 108 110 205 202 203 201 204 206 214 213 208 207 209 210 211 212 221 222 225	C
C	401 451 452 107 405 421 153 113 114 115 116 414 216 215 227 218 217 220 219 224 312 314 316 318 320	C
C	451c 452c 402 403 404 407 406 408 409 410 411–413 416 417 414 418 415 420 419 301 302 226 304 303 306 307 308 305 309 310 311 223 313 315 317 319 321	C
R	101 102 103 104 105 107 106 115 111 112 113 206 201 202 203 208 207 212 214 213 210 252 211 218 221 222 219 220 224 225 223 731–733 707	R
R	401 402 403 109 110 114 108 406 414 204 205 301 226 324 251 217 307 308 227 310 312 314 319 – 321 322	R
R	451c 452c 451 404 405 407 452 408 410 411 409 412 413 302 303 304 352 305 306 351 309 311 313 315 316 – 318 323	R



TS101 2SK55
TS102 2SC1674
TS103 2SC1675
TS201 2SC930
TS203 2SC536
TS251 HA1137
TS351 LA3350
TS401 2SC536
TS451 HA1197
TS301 2SC1681
TS302 2SC1681
TS303 2SC536
TS702 2SC536
S101
S102
S103
S104
S151
S201
S202
S251 18μH
S301 39μH
S302 39μH
S401
S402
S403
S451
S452
CF201
CF202
CF203
CF401
D101 1S2687
D201 1N60P
D202 1N60P
D203 1S2473
D204 1S2473
D205 KB-162
D301 1S2473
D351 GL-30PG
D401 1S2473
IND.201
IND.202
LA005
DIAL POINTER
SK-8 AFC
SK-1c
SK-1d
SK-1e
SK-1f
Level Det.
Tuning Meter Drive
Mute Control
OV SW
OR
Mute Drive
Quadrature det.
Phase Comparator
VCO
1/2 Driver
1/2 Driver ∠90° 19kHz
LAMP DRIVER
(V) ANT. input 1mV
V̸ MUTE ON
V STEREO SIGNAL
+20V +3
+12V +2
FM L
FM R
AM
TP
A
B
C
1
2
3
4
5
6
7

PLATE CERAMIC CAPACITOR

FLAT-FOIL POLYESTER CAPACITOR

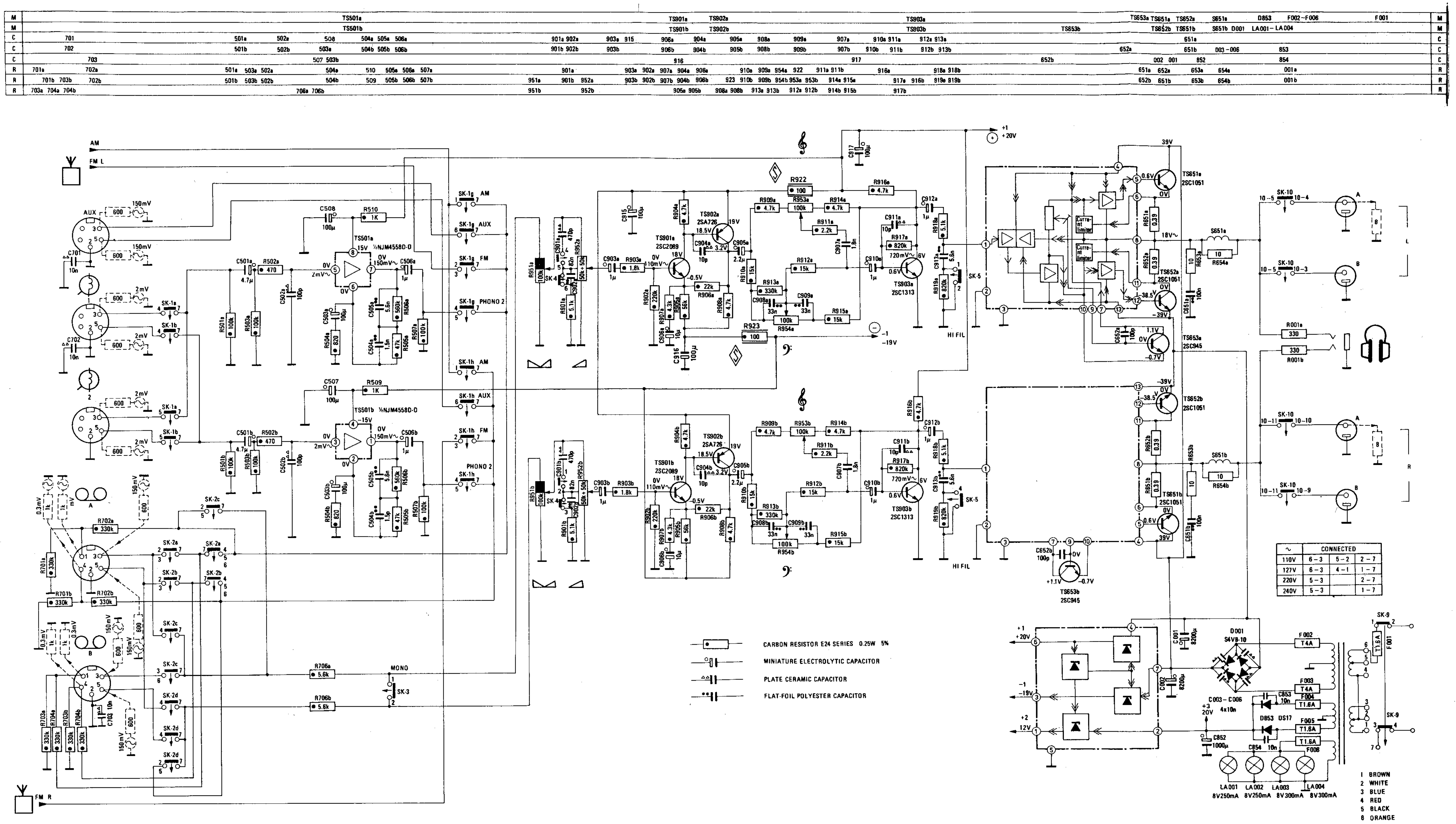
MINIATURE ELECTROLYTIC CAPACITOR

MINIATURE BIPOLAR ELECTROLYTIC CAPACITOR

CARBON RESISTOR E24 SERIES 0.25W 5%

12945D10

CS59109


AM
FM L
FM R
AUX
PHONO 2
MONO
SK-3
SK-4
SK-5
SK-9
SK-10
HI FIL
TS501a ½NJM4558D-D
TS501b ½NJM4558D-D
TS901a 2SC2089
TS901b 2SC2089
TS902a 2SA726
TS902b 2SA726
TS903a 2SC1313
TS903b 2SC1313
TS651a 2SC1051
TS651b 2SC1051
TS652a 2SC1051
TS652b 2SC1051
TS653a 2SC945
TS653b 2SC945
D001 S4VB-10
D853 DS17
C001 8200µ
C002 8200µ
C003 - C006 4x10n
C852 1000µ
F001 T1.6A
F002 T4A
F003 T4A
F004 T1.6A
F005 T1.6A
F006 T1.6A
LA001 8V250mA
LA002 8V250mA
LA003 8V300mA
LA004 8V300mA
+1 +20V
-1 -19V
+2 12V
+3 20V
39V
-39V
Current limiter
1 BROWN
2 WHITE
3 BLUE
4 RED
5 BLACK
6 ORANGE
CARBON RESISTOR E24 SERIES 0.25W 5%
MINIATURE ELECTROLYTIC CAPACITOR
PLATE CERAMIC CAPACITOR
FLAT-FOIL POLYESTER CAPACITOR

~	CONNECTED		
110V	6 – 3	5 – 2	2 – 7
127V	6 – 3	4 – 1	1 – 7
220V	5 – 3		2 – 7
240V	5 – 3		1 – 7

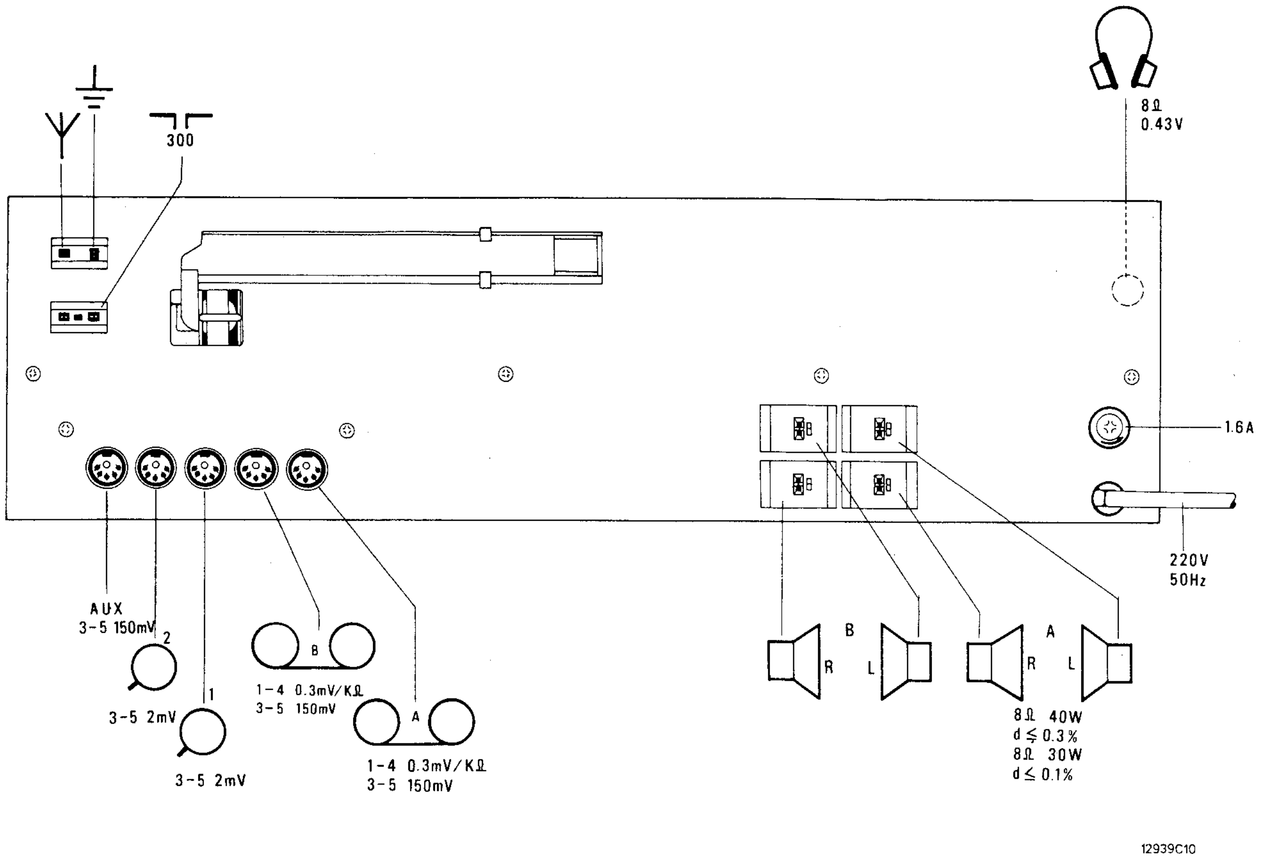
12946E10

SPECIFICATIONS

Tuner/Amplifier

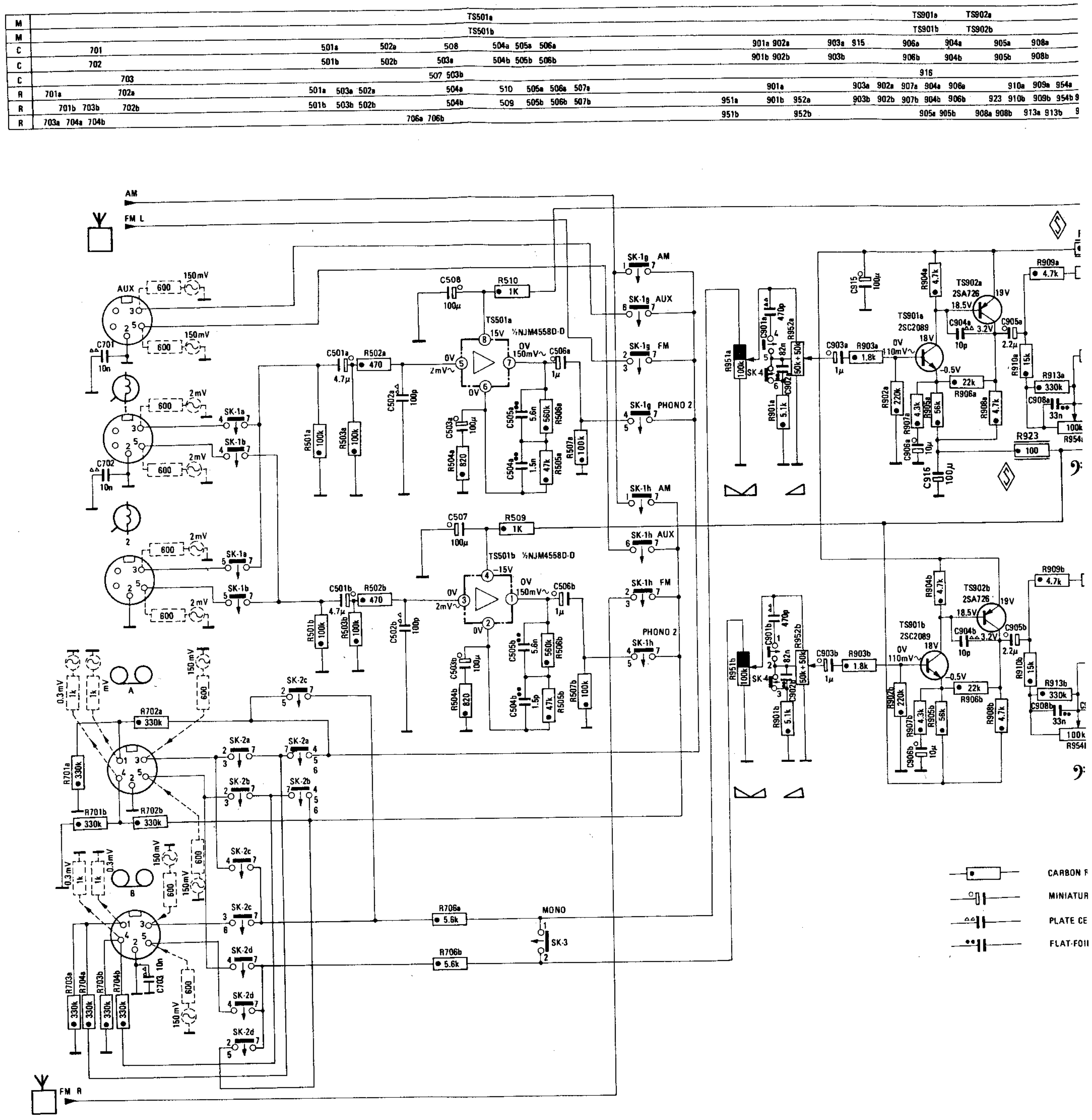
Mains voltage	: 220 V
Mains frequency	: 50 Hz
Dimensions	: 480 x 150 x 380 mm
Aerial input	
FM	: 300 Ω
AM	: 300 Ω
Wave range	
FM	: 87,5 – 108 MHz
AM	: 520 – 1605 kHz
IF-FM	: 10,7 MHz
IF-AM	: 452 kHz : 460 kHz 468 kHz

Input sensitivity for 2x45 W output power	
Tape A; B	: 150 mV at 50 kΩ
Aux	: 150 mV at 50 kΩ
Record player 1; 2	: 2 mV at 47 kΩ
Output impedance	
Loudspeakers	: 4-16 Ω
Headphones	: 8 Ω
Output power	: 2x45 W (4 Ω) d ≤ 0,3 %
Total harmonic distortion	: 0,3 %
Intermod. distortion (250 - 8000 Hz 4 : 1)	: 0,3 %


300
8Ω
0.43V
1.6A
220V
50Hz
AUX
3-5 150mV
2
3-5 2mV
1
3-5 2mV
B
1-4 0.3mV/KΩ
3-5 150mV
A
1-4 0.3mV/KΩ
3-5 150mV
B
R
L
A
R
L
8Ω 40W
d ≤ 0.3%
8Ω 30W
d ≤ 0.1%
12939C10

SK Input selector	Signal to	◇	Trimming point	Adjust	Unit (U)	Indication
FM	98 MHz 1 mV	◇C	[7] Tune in	R251		Signal meter scale: 4
	98 MHz Δf = 0	◇C	[7] Tune in	R351		◇7 Adjust for 19 kHz ± 50 Hz [9]
	98 MHz 1 mV Pilot 19 kHz 8 % S (L=1 kHz 90 % mod.) S (R= no signal)	◇C	[7] Tune in	R352		◇6 min.
	98 MHz 1 mV Pilot 19 kHz 8 % S (R=1 kHz 90 % mod.) S (L=no signal)	◇C	[7] Tune in	R352		◇5 min. [10]
Aux SPEAKERS off	Volume min.			R631 (Rch)	Power Amp. drive unit	◇8 14 mV ± 2 mV
				R631 (Lch)		◇9 14 mV ± 2 mV

- [1] Turn out the cores of coils so that these cores are flush with the upper edges of the coil cans.
- [2] Set the pointer to 600 kHz.
- [3] Set the pointer to 1400 kHz.
- [4] Set the pointer to 1000 kHz.
- [5] Adjust for minimum distortion.
- [6] Set the pointer to 90 MHz.
- [7] Set the pointer to 98 MHz.
- [8] Set the pointer to 106 MHz.
- [9] Use frequency counter.
- [10] Adjust for the same output level of ◇6 and ◇5
- [11] Adjust for just disappear point of output signal at ◇5 or ◇6 .


AM
FM L
FM R
AUX
SK-1g AM
SK-1g AUX
SK-1g FM
SK-1g PHONO 2
SK-1h AM
SK-1h AUX
SK-1h FM
PHONO 2
SK-1a
SK-1b
SK-2a
SK-2b
SK-2c
SK-2d
SK-3
MONO
TS501a ½NJM4558D-D
TS501b ½NJM4558D-D
TS901a 2SC2089
TS902a 2SA726
TS901b 2SC2089
TS902b 2SA726
C508 100µ
R510 1K
C507 100µ
R509 1K
R501a 100k
R503a 100k
R501b 100k
R502a 470
R502b 470
C501a 4.7µ
C501b 4.7µ
R706a 5.6k
R706b 5.6k
R701a 330k
R701b 330k
R702a 330k
R702b 330k
R703a 330k
R704a 330k
R703b 330k
R704b 330k
C701 10n
C702 10n
C703 10n
150mV
2mV
0.3mV
600
1k
R951a 100k
R951b 100k
C915 100µ
C916 100µ
R923 100
R909a 4.7k
R909b 4.7k
CARBON F
MINIATUR
PLATE CE
FLAT-FOI

CS59111